

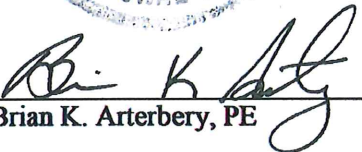
CONTRACT DOCUMENTS AND SPECIFICATIONS
FOR THE REPLACEMENT OF:

SMALL STRUCTURE NO. 23034
WITH
HAMILTON COUNTY BRIDGE NO. 306
CYNTHEANNE ROAD over FRANK KEISER DRAIN
WAYNE TOWNSHIP
HAMILTON COUNTY, INDIANA

PB-14-0004




5/25/2017


Brian K. Arterbery, PE



5/25/2017


Adam Steury, PE, SE



Lochmueller Group, Inc.
3502 Woodview Trace, Suite 150
Indianapolis, IN 46268

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Utility Relocation Plans

NOTICE TO BIDDERS

Notice is hereby given that the Board of Commissioners of Hamilton County, Indiana; hereinafter referred to as the **OWNER**, will receive sealed bids for the following project:

**Replacement Plan for
Small Structure No. 23034 (Bridge No. 306)
Cyntheanne Road Over Frank Keiser Drain
Wayne Township
Hamilton County, Indiana
PB-14-0004**

Proposals may be forwarded individually by registered mail or delivered in person, addressed to the Hamilton County Auditor, 33 North 9th Street, Suite L21, Noblesville, Indiana, 46060, prior to 12:30 p.m., June 26, 2017. After 12:30 p.m., bids can be delivered to the Commissioners Courtroom up until the noticed bid opening time. Bids received after the noticed bid opening time will not be considered but will be returned to the bidder unopened. Only proposals from those **CONTRACTORS** who are registered on the Indiana Department of Transportation's current listing of Prequalified Contractors for item D(A) "Bridges: Highway Over Water" will be considered. Any bids submitted by **CONTRACTORS** not approved for this item on the list will be returned to the bidder unopened.

All proposals will be considered by the **OWNER** at a public meeting held in the Hamilton County Government & Judicial Center in Noblesville, Indiana, Commissioners' Courtroom, and opened and read aloud at 1:00 p.m. local time, June 26, 2017.

The work to be performed and the proposals to be submitted shall include a bid for all general construction, labor, material, tools, equipment, taxes, permits, licenses, insurance, service costs, etc. incidental to and required for this project.

All materials furnished and labor performed incidental to and required by the proper and satisfactory execution of the contracts to be made, shall be furnished and performed in accordance with requirements from the drawings and specifications included in these documents. Bidding documents are available at Lochmueller Group, Inc., 3502 Woodview Trace, Suite 150, Indianapolis, Indiana, 46268, beginning at 9:00 am on June 6, 2017, and may be obtained for the sum of \$100.00 plus shipping for the Proposal, Specifications, Contract Documents and Plans, of which none is refundable. Payment shall be by money order or check and shall be made payable to Lochmueller Group, Inc. Interested parties can view the Contract Documents at www.hamiltoncounty.in.gov. Documents posted on the county website are for informational purposes only. It shall be the responsibility of the individual to periodically check for addendums posted online. Only those who obtain Contract Documents and Plans through Lochmueller Group, Inc. will be automatically notified of addenda. Contract documents and Plans **must be obtained through Lochmueller Group, Inc.** to be eligible to bid on this contract.

Each proposal must be enclosed in a sealed envelope with the county supplied sealed bid notice, bearing the title of the project, bid opening date and the name and address of the bidder firmly affixed. **The bidder shall affix identifying tabs to the following sheets of each proposal:**

- | | |
|---|--|
| <ul style="list-style-type: none"> ■ Form 96 ■ Non-Collusion Affidavit ■ Bid Bond ■ Financial Statement | <ul style="list-style-type: none"> ■ Itemized Proposal ■ Receipt of Addendum (if applicable) ■ Employment Eligibility Verification ■ Drug Testing Program Compliance |
|---|--|

Each individual proposal shall be accompanied by a certified check or acceptable **Bidder's Bond**, made payable to the Hamilton County Auditor, in a sum of not less than **ten percent** of the total amount of the proposal, which check or bond will be held by the said Hamilton County Auditor as evidence that the bidder will, if awarded a contract, enter into the same with the **OWNER** upon notification from him to do so within ten days of said notification. Failure to execute the contract and to furnish performance bond to Hamilton County, Indiana, will be cause for forfeiture of the amount of money represented by the certified check, or bidder's bond, as and for liquidated damages. Form 96, as prescribed by the Indiana State Board of Accounts, shall be properly completed, and submitted with bid proposals. The Commissioners at their discretion reserve the right to waive any and all informalities in the bidding. All bids submitted shall be valid for 90 days from the opening of the bids.

Robin Mills
Hamilton County Auditor

Dated:
Noblesville Reporter: **June 6, 2017 and June 13, 2017**
Noblesville Times: **June 8, 2017 and June 15, 2017**

< NOTICE >

Sealed Bid Documents shall contain on the outside of the sealed envelope the following completed self-sticking label:

All mailer packers will be opened upon receipt. Make sure the sealed envelope is contained within.

< NOTICE >

PROPOSAL

To the Board of County Commissioners of Hamilton County, of the State of Indiana; hereinafter referred to as OWNER:

**Hamilton County Bridge No. 306
Cyntheanne Road over Frank Keiser Drain
Wayne Township
Hamilton County, Indiana**

Pursuant to the legal notice that sealed proposals for the above project would be received by the Board of County Commissioners of Hamilton County, Indiana,

The undersigned hereby tenders this bid to construct the work in accordance with the plans, profiles, drawings, specifications, and all authorized revisions for this contract which are on file in the office of the Hamilton County Highway Department; and to furnish all necessary machinery, equipment, tools, labor and other means of construction and to furnish all material specified in the manner and at the time prescribed and under the supervision and direction of the OWNER or his duly authorized representative and pursuant to the terms of the **Performance Bond** and the **Payment Bond** in the amount of not less than **One Hundred Percent (100%)** of the amount of the Proposal, for the unit prices given on the attached Itemized Proposal.

Together with this PROPOSAL, the undersigned has:

- A. Filed an Acknowledgment of Receipt of Addendum herewith for each Addendum issued;
- B. Filed an Itemized Proposal with a unit price for each item listed, together with a total amount for all items, based upon the unique characteristics of this contract;
- C. Executed the Form No. 96 filed herewith;
- D. Filed a properly executed Bid Bond or certified check made payable to the Hamilton County Auditor herewith in an amount greater than or equal to ten percent (10%) of the total amount of this proposal;
- E. Executed the Non-Collusion affidavit filed herewith;
- F. Executed the Legal Status of Bidder Form filed herewith;
- G. Filed a current Financial Statement herewith;
- H. Filed an Employment Eligibility Verification Form herewith;
- I. Filed a Drug Testing Compliance Form herewith.

If awarded the contract, the undersigned promises to prosecute the work so as to complete the contract within the time specified in the Special Provisions.

Witness our hands this _____ day of _____, 20__.

Firm Name:

Address:

By:

(Signature)

Name:

(Printed)

Title:

(Printed)

6/7/2017

**ITEMIZED PROPOSAL
HAMILTON COUNTY BRIDGE NO. 306
CYNTHEANNE ROAD OVER FRANK KEISER DRAIN
PB-14-0004**

SUBMITTED BY: _____
(Company Name)

(Mailing Address)

(City State Zip)

DATE: _____

DIVISION A - CYNTHEANNE ROAD OVER FRANK KEISER DRAIN

LINE NO.	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
1	CONSTRUCTION ENGINEERING	1	LS		
2	MOBILIZATION AND DEMOBILIZATION	1	LS		
3	CLEARING RIGHT OF WAY	1	LS		
4	PRESENT STRUCTURE, REMOVE	1	LS		
5*	EXCAVATION, COMMON	7490	CYS		
6	EXCAVATION, COMMON (UNDISTRIBUTED)	520	CYS		
7*	BORROW	14,560	CYS		
8	TEMPORARY CHECK DAM, REVETMENT RIPRAP	228	TON		
9	TEMPORARY INLET PROTECTION	1	EACH		
10	TEMPORARY MULCH	7	TON		
11	TEMPORARY SEDIMENT TRAP	88	TON		
12	TEMPORARY SILT FENCE	2201	LFT		
13	NO. 2 STONE	132	TON		
14	TEMPORARY GEOTEXTILE	715	SYS		
15	TEMPORARY SEED MIXTURE	526	LBS		
16*	EXCAVATION, FOUNDATION, UNCLASSIFIED	265	CYS		
17*	SUBGRADE TREATMENT, TYPE I	3426	SYS		
18*	SUBGRADE TREATMENT, TYPE III	220	SYS		
19*	SUBGRADE TREATMENT, TYPE IC	1510	SYS		
20	STRUCTURE BACKFILL, TYPE 1	246	CYS		
21	STRUCTURE BACKFILL, TYPE 2	12	CYS		
22*	STRUCTURE BACKFILL, TYPE 3	213	CYS		
23	GEOGRID, TYPE IA (UNDISTRIBUTED)	779	SYS		

ITEMIZED PROPOSAL
HAMILTON COUNTY BRIDGE NO. 306
CYNTHEANNE ROAD OVER FRANK KEISER DRAIN
PB-14-0004

LINE NO.	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
24	COMPACTED AGGREGATE NO. 53 BASE	1,262	TON		
25	COMPACTED AGGREGATE NO. 53 BASE (UNDISTRIBUTED FOR POOR SOILS)	1,040	TON		
26*	DENSE GRADED SUBBASE	34	CYS		
27	COMPACTED AGGREGATE NO. 53	699	TON		
28	QC/QA-HMA, 2, 64, SURFACE, 9.5 mm	313	TON		
29	QC/QA-HMA, 2, 64, INTERMEDIATE, 19.0 mm	522	TON		
30	QC/QA-HMA, 2, 64, BASE, 25.0 mm	626	TON		
31	JOINT ADHESIVE, SURFACE	1,365	LFT		
32	JOINT ADHESIVE, INTERMEDIATE	1,365	LFT		
33	ASPHALT FOR TACK COAT	2	TON		
34	GUARDRAIL, TERMINAL SYSTEM, W-BEAM CURVED, 4	1	EACH		
35	GUARDRAIL, TRANSITION, TGS-1	4	EACH		
36	GUARDRAIL, END TREATMENT, OS	3	EACH		
37	GUARDRAIL, W-BEAM, 6 FT 3 IN. SPACING	344	LFT		
38	REINFORCED CONCRETE BRIDGE APPROACH, 10 IN.	203	SYS		
39	HMA FOR APPROACHES, TYPE B	61	TON		
40	MAILBOX ASSEMBLY, SINGLE	3	EACH		
41	MONUMENT SECTION CORNER INSTALL	1	EACH		
42	RIGHT-OF-WAY MARKER	12	EACH		
43	MONUMENT, B	2	EACH		
44	BENCHMARK	1	EACH		
45	GEOTEXTILES	1,247	SYS		
46	RIPRAP, CLASS 1	849	TON		
47	RIPRAP, REVETMENT	500	TON		
48	MOBILIZATION AND DEMOBILIZATION FOR SEEDING	3	EACH		
49	EROSION CONTROL BLANKET	14,970	SYS		
50	FERTILIZER	2	TON		
51	SEED MIXTURE R	526	LBS		
52	MULCHING MATERIAL	7	TON		
53	WATER	54	KGAL		
54	PERMANENT TURF REINFORCEMENT MAT	104	SYS		
55	TEST PILE, INDICATOR, PRODUCTION	82	LFT		

ITEMIZED PROPOSAL
HAMILTON COUNTY BRIDGE NO. 306
CYNTHEANNE ROAD OVER FRANK KEISER DRAIN
PB-14-0004

LINE NO.	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
56	TEST PILE, INDICATOR, RESTRIKE	2	EACH		
57	PILE, STEEL PIPE, EPOXY COATED, 0.312 IN., 14 IN.	484	LFT		
58	CONICAL PILE TIP, 14 IN.	18	EACH		
59	CONCRETE, C, SUBSTRUCTURE	161	CYS		
60	REINFORCING BARS, EPOXY COATED	46,148	LBS		
61	THREADED TIE BAR ASSEMBLY, EPOXY COATED	72	EACH		
62	CONCRETE, C, SUPERSTRUCTURE	78	CYS		
63	RAILING, STEEL TS-1	44	LFT		
64	SURFACE SEAL	1	LS		
65	PIPE, TYPE 4, CIRCULAR, 6 IN. (UNDISTRIBUTED)	10	LFT		
66	PIPE, TYPE 4, CIRCULAR, 8 IN. (UNDISTRIBUTED)	10	LFT		
67	PIPE, TYPE 4, CIRCULAR, 10 IN. (UNDISTRIBUTED)	10	LFT		
68	PIPE, TYPE 4, CIRCULAR, 12 IN. (UNDISTRIBUTED)	10	LFT		
69	PIPE, TYPE 1, CIRCULAR, 60 IN.	62	LFT		
70	PIPE, TYPE 3, CIRCULAR, 15 IN.	112	LFT		
71	CONCRETE ANCHOR, 60 IN.	2	EACH		
72	PIPE, TYPE 4, CIRCULAR, 30 IN.	270	LFT		
73	PIPE END SECTION, DIAMETER 15 IN.	5	EACH		
74	INLET, A2	1	EACH		
75	CONSTRUCTION SIGN, C	2	EACH		
76	ROAD CLOSURE SIGN ASSEMBLY	2	EACH		
77	DETOUR ROUTE MARKER ASSEMBLY	12	EACH		
78	CONSTRUCTION SIGN, A	8	EACH		
79	CONSTRUCTION SIGN, B	2	EACH		
80	MAINTAINING TRAFFIC	1	LS		
81	BARRICADE, III-A	48	LFT		
82	BARRICADE, III-B	16	LFT		
83	SIGN POST, SQUARE TYPE 1 REINFORCED ANCHOR BASE	22	LFT		
84	SIGN, SHEET, WITH LEGEND, 0.100 IN.	18	SFT		
85	LINE, MULTI-COMPONENT, SOLID, WHITE, 4 IN.	2,900	LFT		
86	LINE, MULTI-COMPONENT, SOLID, YELLOW, 4 IN.	2,900	LFT		

*Will be paid for as Plan Quantity

TOTAL, DIVISION A

\$

**ITEMIZED PROPOSAL
HAMILTON COUNTY BRIDGE NO. 306
CYNTHEANNE ROAD OVER FRANK KEISER DRAIN
PB-14-0004**

5/25/2017

DIVISION B - WETLAND MITIGATION

LINE NO.	DESCRIPTION	QTY	UNIT	UNIT PRICE	AMOUNT
1	STRIP & STOCKPILE TOPSOIL	1	LS		
2	WETLAND EXCAVATION	1	LS		
3	PLACE & COMPACT FILL	1	LS		
4	INSTALL CLAY CAP	1	LS		
5	FINISH GRADING & TOPSOIL PLACEMENT	1	LS		
6	EMERGENT HERBACEOUS WETLAND MITIGATION	1	LS		
7	FORESTED WETLAND MITIGATION	1	LS		
8	WETLAND BUFFER WITH NATIVE SEED	1	LS		
9	EROSION CONTROL BLANKET	1	LS		
10	SIGNAGE	1	LS		
11	EROSION AND SEDIMENT CONTROL	1	LS		
12	CONSTRUCTION SURVEYING	1	LS		
13	MAINTENANCE OF TRAFFIC	1	LS		
14	CONSTRUCTION MOBILIZATION/DEMOBILIZATION	1	LS		
15	PROJECT MANAGEMENT & ADMINISTRATION	1	LS		

TOTAL, DIVISION B

\$

BID SUMMARY	
DIVISION A	\$
DIVISION B	\$
TOTAL, DIVISION A + DIVISION B	\$

(in writing)

Dollars.

BID CONSIDERATIONS

Bidder acknowledges, warrants, represents and agrees with all of the following:

That the Contractor is solely responsible to provide sufficient materials, equipment and effort to complete the Work.

That if conflict exists between these specifications and the specifications or standards of the County, State or Federal agencies, the County, State or Federal standards shall apply.

BID BOND

KNOWN BY ALL PERSONS BY THESE PRESENTS THAT THE UNDERSIGNED:

BIDDER: _____

as principal, and

SURETY: [Name] _____

[Address] _____

as Surety,

are firmly bound unto Hamilton County, Indiana in the full and just sum of an amount equal to TEN PERCENT of the amount of the Principal's bid, to the payment of which, well and truly to be made, we bind ourselves jointly and severally, and our joint and several heirs, executors, administrators and assigns, firmly by these presents.

THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE SUCH THAT, whereas, the Principal is herewith submitting a bid and proposal for construction and completion of this contract in accordance with plans and specifications, which are made part of this bond;

NOW, THEREFORE, if Hamilton County shall award the Principal the contract and the Principal shall promptly, enter into contract with Hamilton County, then this obligation shall be void; otherwise to remain in full force, virtue, and effect.

IT IS AGREED that no modifications, omissions, or additions in or to the terms of such contract or in or to the plans or specifications therefore shall affect the obligation of such sureties on this bond.

IN WITNESS WHEREOF, we hereto set our hands and seals:

< <BIDDER > >

(Bid Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:

Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the above bond on

this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

< <SURETY > >

(Bid Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:

Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the above bond on

this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

PAYMENT BOND

KNOWN BY ALL PERSONS BY THESE PRESENTS THAT THE UNDERSIGNED:

BIDDER: _____
as principal, and

SURETY: [Name] _____

[Address] _____

as Surety,

are firmly bound unto Hamilton County, Indiana in the penal sum of an amount equal to ONE HUNDRED PERCENT of the amount of the Principal's bid, to the payment of which, well and truly made, we bind ourselves jointly and severally, and our joint and several heirs, executors, administrators and assigns, firmly by these presents.

THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE SUCH THAT, whereas, the Principal is herewith submitting a bid and proposal for construction and completion of this contract in accordance with plans and specifications, which are made part of this bond;

NOW, THEREFORE, if Hamilton County shall award the Principal the contract for work and the Principal shall promptly enter into contract with Hamilton County, for the work and shall promptly make payments of all amounts due to all Claimants, then this obligation shall be void; otherwise to remain in full force, virtue, and effect. Claimant shall mean any subcontractor, material supplier or the person, firm, or corporation furnishing materials or equipment for or performing labor or services in the prosecution of the work provided in such an agreement, including lubricants, oil, gasoline, coal, and coke, repairs on machinery, and tools, whether consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor, performed in such work.

IT IS AGREED that no modifications, omissions, or additions in or to the terms of such contract or in or to the plans or specifications therefore shall affect the obligation of such sureties on this bond.

IN WITNESS WHEREOF, we hereto set our hands and seals:

< <BIDDER > >

(Payment Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:

Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the above bond on
this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

< <SURETY > >

(Payment Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:

Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the above bond on
this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

PERFORMANCE BOND

KNOWN BY ALL PERSONS BY THESE PRESENTS THAT THE UNDERSIGNED:

BIDDER: _____

as principal, and _____

SURETY: [Name] _____

[Address] _____

as Surety,

are firmly bound unto Hamilton County, Indiana in the penal sum of an amount equal to ONE HUNDRED PERCENT of the amount of the Principal's bid, to the payment of which, well and truly made, we bind ourselves jointly and severally, and our joint and several heirs, executors, administrators and assigns, firmly by these presents.

THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE SUCH THAT, whereas, the Principal is herewith submitting a bid and proposal for construction and completion of this contract in accordance with plans and specifications, which are made part of this bond;

NOW, THEREFORE, if Hamilton County shall award the Principal the contract for work and the Principal shall promptly enter into contract with Hamilton County, for the work and shall well and faithfully do and perform the same in all respects according to the plans and specifications and according to the time, terms, and conditions specified in this contract to be entered into, and in accordance with all requirements of law and shall promptly pay all debts incurred by the Principal or a subcontractor in the construction of the work, including labor, service, and materials furnished, and shall remain in effect at least until one year after the date when final payment becomes due, then this obligation shall be void; otherwise to remain in full force, virtue, and effect.

IT IS AGREED that no modifications, omissions, or additions in or to the terms of such contract or in or to the plans or specifications therefore shall affect the obligation of such sureties on this bond.

IN WITNESS WHEREOF, we hereto set our hands and seals:

< <BIDDER > >

(Performance Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:

Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the above bond on

this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

< <SURETY > >

(Performance Bond)

(Signature)

(Printed)

(Title)

State of Indiana, County of _____, SS:

Before me, the undersigned Notary Public, personally appeared;

_____ As Principal and acknowledged the execution of the above bond on

this _____ Day of _____, 20__.

My commission Expires: _____

(County of Residence)

(Notary Signature & Seal)

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LEGAL STATUS OF BIDDER

This Proposal is submitted in the name of:

Firm Name _____

The undersigned hereby designates below his business address to which all notices, directions or other communications may be served or mailed:

Street _____

City _____

State _____ Zip Code _____

The undersigned hereby declares that he has legal status checked below:

- () INDIVIDUAL
 () INDIVIDUAL DOING BUSINESS UNDER AN ASSUMED NAME
 () CO-PARTNERSHIP (The Assumed name of the partnership is
 registered in the County of _____, Indiana.)
 () CORPORATION INCORPORATED UNDER THE LAWS OF THE STATE OF
 . The Corporation is:
 () LICENSED TO DO BUSINESS IN INDIANA
 () NOT NOW LICENSED TO DO BUSINESS IN INDIANA

The name, titles and home address of all persons who are officers or Partners in the organization are as follows:

<u>NAME AND TITLE</u>	<u>HOME ADDRESS</u>
_____	_____
_____	_____
_____	_____

Signed and Sealed this _____ day of _____, 20__.

By _____
 (Signature)

 (Printed)

 (Title)

Employment Eligibility Certification

This Certification is submitted by the undersigned, _____, as part of the contract with Hamilton County for the project known as _____ entered into on the _____ day of _____, 20____. The undersigned affirms under the penalties of perjury that the Contractor does not knowingly employ an unauthorized alien.

The Contractor shall enroll in and verify the work eligibility status of all newly hired employees through the E-Verify program as defined in IC 22-5-1.7-3. The Contractor is not required to participate if the Contractor is self-employed and does not employ any employees.

The Contractor shall not knowingly employ or contract with an unauthorized alien. The Contractor shall not retain an employee or contract with a person that the Contractor subsequently learns is an unauthorized alien.

The Contractor shall require all subcontractors who perform work under its contract, to certify to the Contractor that:

1. The subcontractor does not knowingly employ or contract with an unauthorized alien;
2. The subcontractor has enrolled and is participating in the E-Verify program. The Contractor agrees to maintain this certification at least two years after the term of a contract with a subcontractor.

The County may terminate the contract if the Contractor fails to cure a breach of this provision no later than thirty (30) days after being notified by the County.

The terms of this Certification shall be incorporated within the contract between the Contractor and the County.

I, _____, verify under the penalties of perjury that the facts set out in the above Employment Eligibility Certification are true.

Witness this _____ day of _____, 20____.

Contractor: _____

Address: _____

Signature: _____, _____

Printed: _____ Title

AFFIDAVIT AND WAIVER OF LIEN

☐ Final ☐ Partial ☐ Payment to Follow

State of Indiana, County of _____ SS

_____ Being duly sworn states that he is the _____ of
 (Name of Officer) (Title)
 _____ having contracted with _____ to furnish

certain materials and/or labor as follows _____
 (Description)

for the project known as _____

located at _____ and owned by Hamilton County
 (Owner)

and does hereby further state on behalf of the aforementioned subcontractor/supplier:

(*PARTIAL WAIVER*) that there is due from the *CONTRACTOR* the sum of

_____ Dollars (\$ _____)

- () receipt of which is hereby acknowledged; or
 () the payment of which has been promised as the sole consideration of this affidavit and Partial Waiver of Lien which is given solely with respect to said amount and which waiver shall be effective only upon receipt of payment thereof by the undersigned:

(*FINAL WAIVER*) that the final balance due from the *CONTRACTOR* is the sum of

_____ Dollars (\$ _____)

- () receipt of which is hereby acknowledged or
 () the payment of which has been promised as the sole consideration for the Affidavit and Final Waiver of Lien which shall become effective upon receipt of such payment

THEREFORE, the undersigned waives and releases unto the OWNER of said premises, any and all lien or claim whatsoever on the above-described property and improvements thereon on account of LABOR or material or both, furnished by the undersigned thereto, subject to limitations or conditions expressed herein, if any; and further certifies that no other party has any claim or right to a lien on account of any work performed or material furnished to the undersigned for said project, and within the scope of this affidavit and waiver.

_____ By _____ Title _____
 (Firm) (Authorized Representative)

WITNESS MY HAND AND NOTARIAL SEAL this _____ day of _____ 20____

 (Notary Public)

 (Printed)

My Commission Expires _____

Residing in _____ County

CERTIFICATION LETTER

TO BE COMPLETED BY ALL SUB-CONTRACTORS AND MATERIAL SUPPLIERS

Reference:

**HAMILTON COUNTY BRIDGE NO. 306
CYNTHEANNE ROAD OVER FRANK KEISER DRAIN
WAYNE TOWNSHIP
HAMILTON COUNTY, INDIANA**

We hereby certify that we have examined the Contract Plans and Specifications for this project and that all materials and workmanship will be in strict compliance therewith.

Company Name _____

Address _____

By: _____
(Signature)

(Printed) _____

(Title) _____

Date: _____

Describe Item of work or material to be furnished:

Drug Testing Program
IC -4-13-18

This is submitted by the undersigned, _____, as part of the contract with Hamilton County for the project known as _____ entered into on the _____ day of _____, 20____. The undersigned affirms under the penalties of perjury that the Contractor has a drug testing program in compliance with IC 4-13-18 and the program shall continue during the term of the contract with Hamilton County.

The Contractor shall also require the maintenance of a drug testing program from all subcontractors who perform work under its contract.

The County may terminate the contract if the Contractor fails to comply with the terms of IC 4-13-18 provision no later than thirty (30) days after being notified by the County.

The terms of this requirement shall be incorporated within the contract between the Contractor and the County.

I, _____, verify under the penalties of perjury that all requirements of Drug Testing Program per IC 4-13-18 are in compliance:

Witness this _____ day of _____, 20 ____.

Contractor: _____

Address: _____

Signature: _____, _____

Printed: _____ Title _____

GENERAL PROVISIONS INDEX

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GENERAL PROVISIONS

GP1 CONTRACT DOCUMENTS

The Indiana Department of Transportation, Standard Specifications dated 2016 shall be used in conjunction with these Plans, Contract Forms, General Provision, Special Provisions, Modifications to the Specifications, Standard Sheets and any addenda which may be issued for this project.

It is the intent of these Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance therewith. Any work, materials or equipment that may reasonably be inferred will be supplied whether or not specifically called for.

Wherever reference is made to the Indiana Department of Transportation, Director, or Chief Highway Engineer, it shall be interpreted as the Board of County Commissioners of Hamilton County, Indiana.

GP2 OWNER

The Board of County Commissioners of Hamilton County, Indiana.

GP3 ENGINEER

The Hamilton County Highway Engineer or an authorized representative.

GP4 CONTRACTOR

The Firm or Corporation with whom the OWNER has entered into the Construction Contract.

GP5 BIDDING RESTRICTIONS

Only bids from those CONTRACTORS who are currently registered on the Indiana Department of Transportation's listing of Prequalified Contractors for item D(A) "Bridges: Highway Over Water" will be considered. Any bids submitted by CONTRACTORS not on this list will be returned to the bidder unopened.

GP6 EXAMINATION OF THE PROJECT SITE

Before the bid date, all bidders shall carefully and thoroughly examine the entire site of the proposed work and adjacent premises and the various means of approach and access thereto by means of a site inspection visit, and make all necessary investigations to inform themselves thoroughly as to the facilities necessary for delivering, placing, and operating the necessary construction equipment, and for delivering and handling materials at the site, and shall inform themselves thoroughly as to any and all actual or potential difficulties, hindrances, delays, and constraints involved in the commencement, prosecution and completion of the proposed work in accordance with the requirements of this contract. The *CONTRACTOR*, by the execution of the Contract, shall in no way be relieved of any obligation under it, due to his failure to receive or examine any form or legal instrument, or to visit the site and acquaint himself with the conditions there existing. The *OWNER* will be justified in rejecting any claim based on facts which he should have noticed as a result thereof.

GP7 CONTRACT QUESTIONS

Submit all questions in writing via e-mail to Lochmueller Group, Inc.; Attn: Brian Arterbery; barterbery@lochgroup.com prior to noon local time June 20, 2017. Questions will be answered via addendum. All addenda will be emailed to the email address provided on the "Record of Plans

Purchased” that is required to be filled out by anyone purchasing plans. It is the *CONTRACTOR*’s responsibility to provide a valid email address when purchasing plans. No questions will be answered verbally or by telephone.

GP8 PUBLIC OPENING OF BIDS

Bids will be opened publicly and read aloud at the time and place specified in the “Notice to Bidders”. Bidders, or their authorized agents, are invited to be present. Any Bids received after the time specified in the “Notice to Bidders” will be returned to the bidder unopened.

GP9 AWARD OF CONTRACT

The *OWNER* reserves the right to reject any or all bids or to waive any informalities and to accept the bid which it deems favorable to the interest of the *OWNER* after all bids have been examined and scrutinized.

GP10 NOTICE TO PROCEED

The *CONTRACTOR* shall start to perform the work on the date designated in the written Notice to Proceed, but no work shall be done at the site prior to the date of the Notice to Proceed.

GP11 PRECONSTRUCTION CONFERENCE

Before the *CONTRACTOR* is issued Notice to Proceed, a conference attended by the *OWNER*, *ENGINEER*, *CONTRACTOR* and others as appropriate will be held. The purpose of this conference will be to discuss procedures for making submittals, processing applications for payment, and to establish other procedures and understandings bearing upon coordination and performance of the work.

GP12 PROGRESS SCHEDULE

Within ten days after the date of the Notice to Proceed, the *CONTRACTOR* shall submit to the *ENGINEER* for review a proposed schedule indicating the starting and completion dates of the various stages of the work to be performed under this contract. The *ENGINEER* shall review the proposed schedule to determine conformity with the contract and will make recommendations to the *OWNER* concerning approval thereof; however the review, approval or other action taken by the *ENGINEER* or *OWNER* in respect of such schedules shall not relieve the *CONTRACTOR* of its obligations to perform the work within the contract schedule(s).

GP13 SUPERVISION

The *CONTRACTOR* shall supervise and direct the work completely and efficiently devoting such attention thereto and applying such skills and expertise as may be necessary to perform the work in accordance with the Contract Documents.

GP14 RESIDENT SUPERINTENDENT

The *CONTRACTOR* shall keep on the work site at all times during its progress, a competent resident superintendent, who shall not be replaced without written notice to the *ENGINEER* except under extraordinary circumstances. The superintendent will be the *CONTRACTOR*’s representative at the site and shall have authority to act on behalf of the *CONTRACTOR*. All communications given to the superintendent shall be as binding as if given to the *CONTRACTOR*.

GP15 PROJECT STAFFING

The *CONTRACTOR* shall provide competent, suitably qualified personnel to survey and lay out the work and perform construction as required by the Contract Documents. The *CONTRACTOR* shall at all times maintain good discipline and order at the site.

GP16 NOTIFICATION OF WORK SCHEDULE

The *CONTRACTOR* shall provide a listing of the next work day's work activities by 12:00 p.m. of that day's work for the *ENGINEER'S* scheduling and inspection. All work scheduled for Monday shall be provided on Friday of the preceding week.

Failure to provide such notice within the specified time may result in the failure of the *ENGINEER* to pay for any material placed that day.

GP17 PROJECT RESPONSIBILITY

Unless otherwise specified in the Contract Documents, the *CONTRACTOR* shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, and sanitary facilities and all other facilities and incidentals necessary for the furnishing, performance, start-up, and completion of the work.

GP18 STANDARDS OF QUALITY

All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for in the Contract Documents shall expressly run for the benefit of the *OWNER*. If requested by the *ENGINEER*, the *CONTRACTOR* shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

GP19 WARRANTY OF WORK

The *CONTRACTOR* warrants and guarantees to the *OWNER* that all work will be performed, supplied, furnished and installed, and that the work will perform in strict accordance with the Contract Documents and will not be defective. Notice of all work determined or suspected to be defective or not in conformity with the Contract Documents shall be given to the *CONTRACTOR* within one year after observance thereof.

GP20 INSPECTION OF WORK

The *ENGINEER* and his representatives shall at all times have access to the work wherever it is in preparation or progress and the *CONTRACTOR* shall provide proper facilities for such access and for inspection.

If the specifications, the *ENGINEER'S* instructions, laws, ordinances or any public authority require any work to be specially tested or approved, the *CONTRACTOR* shall give the *ENGINEER* timely notice of its readiness for inspection and, if the inspection is by an authority other than the *ENGINEER*, the date fixed for such inspection. If any work should be covered up without the approval or consent of the *ENGINEER*, it must, if required by the *ENGINEER*, be uncovered for examination at the *CONTRACTOR'S* expense.

Re-examination of questioned work may be ordered by the *ENGINEER* and if so ordered the work must be uncovered by the *CONTRACTOR*. If such work is found to be in accordance with the Contract Documents, the *OWNER* shall pay the cost of the re-examination and replacement. If such work is not

found to be in accordance with the Contract Documents, the *CONTRACTOR* shall pay the cost, unless he shows that the defect in the work was caused by another *CONTRACTOR*, and in that event the *OWNER* shall pay the cost of the re-examination and replacement.

GP21 CHANGES IN THE WORK

The *OWNER*, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the work, the Contract Sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.

In giving instructions, the *ENGINEER* shall have authority to make minor changes in the work, not involving extra cost, and not inconsistent with the purposes of the work, but otherwise, except in an emergency endangering life or property, not extra work or change shall be made unless in pursuance of a written order from the *OWNER* signed or countersigned by the *ENGINEER*, or a written order from the *ENGINEER* stating that the *OWNER* has authorized the extra work or change, and no claim for an addition to the contract sum shall be valid unless so ordered. The value of any such extra work or change shall be determined in one or more of the following ways:

- (a) By estimate and acceptance in a lump sum
- (b) By unit prices named in the contract or subsequently agreed upon
- (c) By cost and percentage or by cost and a fixed fee

If none of the above methods is agreed upon, the *CONTRACTOR* provided he receives an order as above, shall proceed with the work. In such case and also under case (c), he shall keep and present in such form as the *ENGINEER* may direct, a correct account of the cost, together with vouchers. In any case, the *ENGINEER* shall certify to the amount including reasonable allowance for overhead and profit, due to the *CONTRACTOR*. Pending final determination of value, payments on account of changes shall be made on the *ENGINEER*'s certificate.

Should conditions encountered below the surface of the ground be at variance with the conditions indicated by the drawings and specifications, the contract sum shall be equitably adjusted upon claim by either party made within a reasonable time after the first observance of the conditions.

GP22 DELETION OF WORK

The *OWNER* has the right to delete any items that are a part of this contract.

GP23 DELAY AND EXTENSION OF TIME

If the *CONTRACTOR* should be delayed at any time in the progress of the work by and act or neglect of the *OWNER* or the *ENGINEER*, or of any employee of either, or by any separate *CONTRACTOR* employed by the *OWNER*, or by changes ordered in the work, or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the *CONTRACTOR*'S control, or by delay authorized by the *ENGINEER* pending arbitration, or by any cause which the *ENGINEER* shall decide to justify the delay, then the time of completion shall be extended for such reasonable time as the *ENGINEER* may decide.

No such extension shall be made for delay occurring more than seven days before claim therefore is made in writing to the *ENGINEER*. In the case of continuing cause of delay, only one claim is necessary.

GP24 HOLIDAYS THAT WORK IS NOT PERMITTED

The *CONTRACTOR* may not perform work on this project on the following days without written permission from the *ENGINEER*:

- 1) Sundays
- 2) New Year's Day
- 3) Memorial Day
- 4) Independence Day
- 5) Labor Day
- 6) Thanksgiving Day and the day after Thanksgiving
- 7) Christmas Day

GP25 PERMITS

All permits and licenses which may be required due to construction methods such as, but not limited to, borrow or disposal pits, steam crossings, causeways, work bridges, cofferdams, etc., but which are not part of the contract documents shall be procured by the *CONTRACTOR* prior to beginning the work which requires the permit.

All charges, fees, and taxes shall be paid, and all notices necessary and incidental to the due and lawful prosecution of the work shall be given.

GP26 UTILITIES

The *CONTRACTOR* shall be responsible for contacting and coordinating with all utilities affected by this project. Contract working days will be charged unless the *CONTRACTOR* can show written evidence that he is making every possible effort on his part to get the utility work completed.

GP27 NON-DISCRIMINATION

In compliance with the Acts of Indiana General Assembly, 1933, Chapter 270, the *CONTRACTOR* hereby agrees:

That with respect to hire, tenure, terms, conditions, or privileges of employment of employees for the performance of work, under this Contract, or any Subcontract hereunder, no *CONTRACTOR*, Subcontractor, nor any person acting on behalf of such *CONTRACTOR* or subcontractor shall, by reason of race, color, religion, sex, national origin, or ancestry discriminate against any citizen qualified to do work to which the employment relates;

That no *CONTRACTOR*, Subcontractor, nor any person on his behalf shall, in any manner, discriminates against or intimidate any employee hired for the performance or work under this Contract on account of race, color, religion, sex, national origin, or ancestry;

That this Contract may be canceled or terminated by the *OWNER*, and all money due or to become due hereunder may be forfeited for a violation of the terms or conditions of this section of the Contract.

GP28 INSURANCE**Contractor's Liability Insurance**

The *CONTRACTOR* shall maintain such insurance as well as protect himself from claims under Workmen's Compensation Acts and other employee benefit acts; from claims for damages because of bodily injury, including death, to his employees and all others; and from claims for damages to property, any or all of which may arise out of or result from the *CONTRACTOR'S* operation under the Contract, whether such operations be by himself or by any subcontractor, or anyone directly or indirectly employed by either of them. This insurance shall be written for not less than any limits of liability specified herein.

Contractor's Insurance

The types and minimum amount of insurance to be provided for by the *CONTRACTOR* shall be as follows:

(A) Workmen's Compensation and Occupational Disease Insurance

The *CONTRACTOR* shall provide Workmen's compensation and Occupational Disease Insurance as required by law. Such policy shall specifically include coverage for the State of Indiana, and such adjoining states as required by the *CONTRACTOR'S* operations.

(B) Employer's Liability Insurance

The *CONTRACTOR* shall provide Employer's Liability with minimum limits as follows:

\$100,000 bodily injury by accident, each accident;
 \$100,000 bodily injury by disease, each employee;
 \$500,000 bodily injury by disease, policy limit.

(C) Comprehensive General Liability Insurance

The *CONTRACTOR* shall maintain a Comprehensive General Liability form of Insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 each occurrence, \$2,000,000 annual aggregate. The insurance policy shall include the following:

1. Premises Operations: The policy shall include coverage for the following special hazards when applicable to the project:
 - (a) Property damage arising out of blasting or explosion
 - (b) Property damage arising out of collapse of or structural injury to any building or structure due to grading of land, excavation, burrowing, filling, backfilling, tunneling, pile driving, cofferdam work or caisson work or to moving, shoring, under pinning, raising, or demolition of any building or structure or rebuilding of any structural support thereof.
 - (c) Injury to or destruction of wires, conduits, pipes, mains, sewers, and other similar property of any apparatus in connection therewith below the surface of ground, if caused by use of mechanical equipment.

2. Contractual (Broad Form Indemnification): The *CONTRACTOR* agrees to indemnify and save harmless the *OWNER*, his agents and employees, from and against all loss or expense (including costs and attorneys' fees) by reason of liability imposed by law upon the *OWNER* for damages because of bodily injury, including death, at any time resulting therefrom sustained by any person or persons or on account of damage to property is due or claimed to be due to negligence of the *CONTRACTOR*, his Subcontractors, employees or agents.
3. Contractor's Protective: The *CONTRACTOR* shall maintain this type of coverage on a "Blanket" basis to cover the operations of any Subcontractors.

(D) Automotive Liability Insurance

The *CONTRACTOR* shall maintain Comprehensive Automobile Liability Insurance policy with a combined single limit of not less than \$500,000. This coverage may be provided either as a separate policy or as a part of the comprehensive liability policy described above. The automobile insurance must include coverage for all owned, non-owned, and hired vehicles.

(E) Furnish Indiana State Forms No. 19 (Workmen's Compensation) and No. 105 (Occupational Disease Act).

(F) Umbrella Insurance

The *CONTRACTOR* shall maintain an umbrella policy with limits of not less than \$1,000,000 per occurrence, \$1,000,000 aggregate in addition to their primary insurance.

GP29 ADDITIONAL INSURED

The *CONTRACTOR* shall submit a "Certificate of Insurance" indicating the above necessary coverage as well as naming the *OWNER*, its employees and representatives and *ENGINEER* as "Additional Insured" on all policies except Worker's Compensation.

GP30 PROOF OF INSURANCE

The *CONTRACTOR* shall not commence work until he has obtained all insurance specified herein, has filed with the *OWNER* one (1) copy of Certificate of Insurance, and such insurance has been approved by the *OWNER*.

Should any coverage approach expiration during the Contract period, it shall be renewed prior to its expiration, and certificate again filed with the *OWNER*. If any of such policies are canceled or are changed so as to reduce the coverage evidenced by the Certificate, at least ten (10) days prior written notice by registered mail of such cancellation or change shall be sent to the *OWNER*.

All insurance provided for under this Section shall be written by Insurance Companies licensed to do business in Indiana and countersigned by registered Indiana agent. The insurance company shall file with the *OWNER*, one (1) copy of Affirmation of Authority, on the form furnished by the *OWNER*, as verification of the resident agent.

All insurance shall be maintained in full force and effect until the Contract has been fully and completely performed.

GP31 PARTIAL PAYMENTS

Partial payments will be made once each month as the work progresses. Said payments will be based upon estimates prepared by the *CONTRACTOR* using the provided HCHD FORM 8049, and approved by the *ENGINEER* for the value of the work performed and materials complete in place in accordance with the contract, plans and specifications. No partial payment will be made when the amount due the *CONTRACTOR* since the last estimate amounts to less than Five Hundred Dollars. From the total of the amount determined to be payable on a partial payment, ten percent of such total amount will be deducted and retained by the *OWNER* until the final completion and acceptance of the work.

GP32 FINAL PAYMENT

When the contract work has been completed in an acceptable manner in accordance with the terms of the contract, the *CONTRACTOR* will prepare a final estimate for the work and will furnish the *ENGINEER* with a copy thereof. Before final payment of the contract, the *CONTRACTOR* shall furnish the provided Affidavit and Waiver of Lien from all subcontractors, material suppliers and equipment suppliers who provided goods and/or services valued at \$500.00 or greater. Final payment will not be made until a final inspection has been performed, the work has been accepted by the County and has met the requirements of Section 109.08 of the Indiana Department of Transportation Standard Specifications. The *ENGINEER*, acting for the Board of County Commissioners, will then certify to the County Auditor the balance due the *CONTRACTOR*, and said certificate will be deemed an acceptance of the completed contract by the *OWNER*.

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SPECIAL PROVISIONS

SP1 CONTRACT TIME

The schedule for the completion of the work included in this contract including incidentals and clean up, shall be governed on a *Completion Date* basis.

The Completion Date for Division A, Cyntheanne Road over Frank Keiser Drain shall be December 1, 2017 and for Division B, Wetland Mitigation by May 30, 2018.

SP2 ROAD CLOSURE

The *CONTRACTOR* shall provide the *OWNER* at least three week notice prior to closing the road. In no case shall the road be closed without prior consent from the *OWNER*.

The roadway shall be reopened to traffic on or before December 1, 2017.

SP3 LIQUIDATED DAMAGES

If the *CONTRACTOR* fails to complete the work within the Contract Time, or extension of time granted by the *OWNER*, then the *CONTRACTOR* will pay to the *OWNER* the amount for liquidated damages as set forth in 108.09, based on the Original Contract Amount and Calendar Days/Fixed Date for each calendar day that the *CONTRACTOR* shall remain in default after the time of completion stipulated in the Contract Documents.

SP4 EXISTING CONDITIONS

The *CONTRACTOR* shall verify the elevation and measurements of all points where new construction is to match existing conditions prior to the commencement of any construction activities.

Where new work is to be fitted to old work, the *CONTRACTOR* shall check all dimensions and conditions in the field and report any errors or discrepancies to the *ENGINEER* or assume responsibility for their correctness and the fit of new parts to old. If such parts do not fit properly, the *CONTRACTOR* shall make such alterations to new parts as may be necessary to assure proper fits and connection, which meets the approval of the *ENGINEER*.

No direct payment shall be made for this work, but the cost thereof shall be included in the costs of other items of the contract.

SP5 GEOTECHNICAL INVESTIGATION

A Geotechnical investigation for this project site has been performed by Earth Exploration, Inc., Indianapolis, Indiana. This report presents the soil evaluation, Geotechnical recommendations and construction considerations for this project.

A copy of this report is included in the contract documents.

SP6 CLEARING RIGHT-OF-WAY

Clearing Right-of-Way shall be in accordance with the requirements of Section 201 except as follows: The initial payment for clearing right-of-way will be limited to 5 percent of the original total bid. If the

contract lump sum price for clearing right-of-way is greater than 5 percent of the original total bid, the amount over 5 percent will not be paid until the contract has been completed and accepted.

Trees, brush, and other obstructions shall be cleared from the entire construction limits of the project. In addition, trees and brush shall be cleared from land between construction limits and project right-of-way wherever such clearing is necessary to build the project or relocate utilities, except areas that are marked "Sensitive Environmental Resource" and subject to any notes on the plans that identify specific trees or areas to remain undisturbed. Clearing is to include trimming all tree branches that overhang the right-of-way unless otherwise directed by the *ENGINEER*. The cost of tree and stump removal will not be paid for, but shall be included in the lump sum price for "Clearing Right of Way."

This item includes the removal of all existing pipes, culverts, and all other drainage structures in accordance with Section 202, to be removed during this project.

SP7 DISPOSAL OF EXCESS MATERIAL

All excess material not to be salvaged (waste) shall be removed from the project site. Whether a private or public waste site is utilized, such disposal shall comply with all Federal, State and local ordinances and permit requirements. A copy of all permits obtained or applied for shall be submitted to the *ENGINEER* prior to the material leaving the site.

The *CONTRACTOR* shall submit, in writing, the location of the proposed dump site, for review, prior to the commencement of construction.

No direct payment will be made for this work but the cost thereof shall be included in the costs of the other items of the contract.

SP8 OPEN BURNING OF NATURAL GROWTH

Open burning of natural growth will not be permitted on this contract.

SP9 TREE AND LAWN PROTECTION

When constructing private drives, the *CONTRACTOR* shall use reasonable care for the protection of trees, shrubbery, and lawn areas beyond the permanent right-of-way.

The cost of the protection or trimming and proper restoration of disturbed areas shall not be paid for directly, but shall be included in the cost of Clearing Right-of-Way.

SP10 RESTORATION OF DISTURBED AREAS

Cavities formed by the removal of shrubs, trees and/or stumps and located outside of proposed pavement areas shall be backfilled and compacted with "B" Borrow. Such compaction shall comply with Section 211.04. The top six (6) inches of the backfilled area shall be topsoil in accordance with Section 914.01.

Any roots remaining after all the removal of any designated item shall be removed to a depth of 6 inches below the surface of the surrounding ground area. The final preparation of these areas shall be in accordance with Section 621.

No direct payment shall be made for this work, but shall be included in the cost of other items.

SP11 PRIOR TO CLOSING ROADS TO TRAFFIC

The *CONTRACTOR* is to notify U.S. Post Office, rural fire departments, affected schools, local police agencies and Hamilton County Sheriff's Department, copy to *ENGINEER*. The XG20-5 Closure Signs are to be in place a minimum of ten days prior to the actual closure.

SP12 AFTER OPENING ROADS TO TRAFFIC

The *CONTRACTOR* is to notify the U.S. Post Office, rural fire departments, affected schools, local police agencies and Hamilton County Sheriff's Department, copy to *ENGINEER*.

SP13 DECREASED OR INCREASED QUANTITIES OF WORK

These Special Provisions shall not be considered as a waiver of, nor shall they invalidate the right of the *ENGINEER* to increase or decrease quantities of work.

SP14 TESTING OF MATERIALS

The *CONTRACTOR* shall be responsible for all testing and sampling of materials as hereinafter specified. The *CONTRACTOR* shall furnish certified tests for the following materials, which are to be made by an *independent* laboratory approved by the *ENGINEER*. Testing performed by an agent of a material producer or supplier will not be considered independent. The cost of providing samples and testing will not be paid for directly, but will be included in the cost of other items.

CONCRETE:

- Air Entrainment and Slump tests for each 25 CYS or fraction thereof per day
- Cylinders (set of 3) for compressive testing for each 50 CYS or fraction thereof per day

BORROW:

- The *CONTRACTOR* shall determine the location of the borrow pit and shall have laboratory density tests made as prescribed in Section 203.24 and outlined in AASHTO T-99. The subgrade shall be constructed in accordance with Section 207.

BITUMINOUS MATERIAL:

- The *CONTRACTOR* shall provide proof that all bituminous material used shall be of State tested material and on immediate usage basis. Class D certification is required.

REINFORCING STEEL:

- The *CONTRACTOR* shall furnish the *ENGINEER* with two copies of certified mill test reports. Reinforcing steel shall comply with the requirements set out in Article 910.01.

SP15 UTILITY INFORMATION

All applicable sections for 105.06 and 107.20 shall apply except as amended elsewhere within the contract documents and as follows

The utilities are beyond the control of the *OWNER*. Coordination with any applicable utility(s) is the sole responsibility of the *CONTRACTOR*.

The following is provided for information only. The *CONTRACTOR* shall contact the following personnel or companies to coordinate his work prior to the commencement of any construction activities:

Utility:

<i>Citizens Energy Group</i>	<i>Scott Ritter</i>	<i>sritter@citizensenergygroup.com</i>	<i>Relocation Required</i>
<i>Duke Energy</i>	<i>Brynn Streeter</i>	<i>Brynn.streeter@duke-energy.com</i>	<i>Relocation Required</i>
<i>AT&T</i>	<i>Brian Cravens</i>	<i>bc3785@att.com</i>	<i>Relocation Required</i>
<i>Comcast</i>	<i>Thomas Spencer</i>	<i>tspencer@telecomplacement.com</i>	<i>Relocation Required</i>

SP16 PROTECTION OF FIELD TILE

All field tiles encountered and affected by the scope of work specified within the contract documents shall be given a positive outlet. Animal guards are required on the ends of all field tiles. The cost of all animal guards shall be included in the cost of the pipe.

Any tile outside the construction limits damaged by the *CONTRACTOR*'S operations shall be replaced by the *CONTRACTOR* at his own expense.

SP17 BENCHMARK

The *CONTRACTOR* shall install a Hamilton County Geodetic Control benchmark at Bridge #306. This work is to be done in accordance with Section 105.08 and Section 615 of the Standard Specifications. The *CONTRACTOR* shall coordinate with the Hamilton County Surveyor's Office (HCSO) for the location of the benchmark.

The HCSO will provide the *CONTRACTOR* with the new monument to be installed. **In addition, the *CONTRACTOR* shall certify the elevation of the installed benchmark.**

The cost of all labor, materials and equipment necessary to complete this work shall be included in the cost of the pay item "Benchmark, Each".

SP18 PERMITS

Copies of all permits obtained by the *OWNER* are included as a part of the contract documents in Appendix A. According to the requirements of the governing agencies, the authorizations must be conspicuously displayed at the project site and the *CONTRACTOR* shall perform his work in accordance with the conditions contained in all permits.

The *CONTRACTOR* shall procure all permits and licenses required due to construction methods in accordance with Section 107.02. A copy of each permit application and approval must be provided to the *ENGINEER* prior to issuance of notice to proceed with work which requires the permit.

SP19 DEWATERING PLAN

The *CONTRACTOR* shall submit in writing a dewatering plan for the bridge construction prior to the beginning of work. The plan shall include a sketch showing the proposed location of any temporary pipes, causeways, sumps, etc. as well as text describing the method of handling both low-flow and high-flow conditions. The dewatering plan shall meet all OSHA requirements for safety at all times. Damming of the waterway without a provision for continuous flow in the case of pump failure will not be allowed.

If permits beyond those obtained in advance by the *OWNER* are required due to the method of dewatering, the *CONTRACTOR* shall obtain the necessary permits and provide copies of the permit applications and approvals to the *ENGINEER*. No work in the channel shall proceed until the *CONTRACTOR* has obtained the necessary permits, and has been directed to proceed by the *ENGINEER*.

All costs related to dewatering the excavation shall be included in the cost of other items.

SP20 EMBANKMENT OVER EXISTING ROADBEDS

The existing pavement shall be removed entirely, or milled full-depth, spread and re-compacted prior to any fill being placed in the roadbed. The cost of removal of the existing pavement is included in the pay item "Excavation, Common".

SP21 GUARDRAIL DELINEATORS

This work shall consist of installing Mono and/or Bi-directional traffic Guardrail Delineators furnished by Hamilton County Highway Department and installed by the *CONTRACTOR*. The *ENGINEER* shall mark delineator location.

This material is manufactured by AKT Corporation, item No. 567 Triangular Guardrail Delineator. The delineators attach to the existing guardrail hex bolt; no additional material is required.

All labor, equipment, supervision and other related work required to complete this installation shall be included in the cost of other items.

SP22 WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS

Working Restrictions during holiday periods shall be in accordance with Section 108.08 of the INDOT Standard Specifications.

SP23 CONSTRUCTION ENGINEERING

This work shall consist of all construction lay-out and staking in accordance with Section 105.08 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as "Construction Engineering", *LSUM*.

SP24 ENVIRONMENTAL RESTRICTIONS

The INDOT Standard Specifications are revised as follows:

SECTION 107, AFTER LINE 541, INSERT AS FOLLOWS:

107.14.1 Environmental Restrictions

The work shall be performed in accordance with the environmental restrictions shown below.

(a) Tree Habitat

All trees outside the construction limits shall not be disturbed.

(b) Indiana Bat

*All felling of trees equal to or greater than 3 in. in diameter shall be performed between October 1 and the following March 31, inclusive, so as to minimize project-related impacts on the Indiana bat, *Myotis Sodalis*.*

(c) Fish Spawning

If the contract contains an in-channel excavation restriction due to impacts upon fish spawning, the Contractor may request a waiver of a portion of the restriction period by means of written contact to the Indiana Department of Natural Resources Division of Fish and Wildlife, Environmental Supervisor. Such request shall be made not more than two weeks prior to anticipated in-channel work during the restriction period shown above. The expected response time from the Indiana Department of Natural Resources will be approximately five work days. The Indiana Department of Natural Resources will consider each waiver on a case-by-case basis.

The information and criteria shown below shall be provided with the waiver request.

- 1. Location of the project, including stream name, route number or road name, Indiana Department of Natural Resources Certificate of Approval of Construction in a Floodway docket number, and description of the proposed work.*
- 2. Amount of time required to do the work, and the dates requested to be waived. The amount of time required shall be reasonable to accomplish the proposed work.*
- 3. The amount of in-channel area proposed to be disturbed by the work. Disturbance across the full width of the stream may result in more negative impacts than disturbance of smaller portions of the stream.*
- 4. Water level at the time of request.*
- 5. Approximate water temperature at the time of the request.*
- 6. The substrate of the stream bottom at the project site, 100 yd upstream of the site, and 100 yd downstream of the site. A bedrock substrate is not necessarily beneficial for spawning areas. However, silt, sand, or small gravel is more readily useable. Spawning locations which are downstream of the project may more likely be impacted by disturbances than such location which are upstream. Sediments may cover eggs.*

A waiver of portion of the in-channel excavation restriction will be cause for the Department to adjust contract times accordingly. Final approval of the waiver will be made by the Department. Such approval will not occur until the contract time adjustment is agreed upon.

SP25 MOBILIZATION AND DEMOBILIZATION

This work shall consist of all work necessary for the movement of personnel and equipment to and from the project site, except for seeding, and for the establishment and removal of all facilities necessary to the performance of the work in accordance with Section 110 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as "Mobilization and Demobilization", LSUM.

SP26 PRESENT STRUCTURE, REMOVE

This work shall consist of all work required to remove the existing 12-ft x 5-ft concrete box culvert,

wingwalls, foundations and related appurtenances in whole as indicated in the detail drawings and in accordance with Section 202 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the following pay items:

“Present Structure, Remove”, LSUM

SP27 EXCAVATION, COMMON

This work shall consist of all excavation which is not otherwise classified and paid for, including asphalt type pavement and all rippable materials as indicated in the detail drawing and in accordance with Section 203.02 of the INDOT Standard Specifications.

The plan quantity includes removal of all topsoil and existing pavement. Existing pavement is considered unusable for Borrow. Topsoil shall be stripped and stored on-site and then reused on the embankment slopes.

Any on-site material that is used for Borrow shall be aerated via continuous disking and drying to reduce moisture content, per the geotechnical report.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as “Excavation, Common”, CYS. This item will be paid for as a plan quantity.

SP28 BORROW

This work shall consist of approved materials and in accordance with Section 203.08 of the INDOT Standard Specifications.

All labor, material, equipment, supervision, and other related work required to complete this shall be included in the pay item identified as “Borrow”, CYS. This item will be paid for as a plan quantity.

SP29 EXCAVATION, FOUNDATION, UNCLASSIFIED

This work shall consist of the excavation and backfill or disposal of all materials required for the construction of foundations and substructures of bridges, culverts, and retaining walls as indicated in the detail drawings and in accordance with Section 206.05 of the INDOT Standard Specifications.

All labor, material, equipment, supervision, disposal of material, dewatering, and other related work required to complete this shall be included in the pay item identified as “Excavation, Foundation, Unclassified”, CYS. This item will be paid for as a plan quantity.

SP30 TEMPORARY EROSION CONTROL MEASURES

This shall consist of all work and material required to install and maintain temporary erosion control measures as indicated in the detail drawing and in accordance with Section 205 and Section 621 of the INDOT Standard Specifications. Removal of sediment, as required, will not be measured or paid for but shall be included in the cost of other items.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the following pay items

“Temporary Inlet Protection”, EACH

“Temporary Mulch”, TON

“Temporary Silt Fence”, LFT

“No. 2 Stone”, TON

“Temporary Check Dam, Revetment Riprap”, TON

“Temporary Sediment Trap”, TON

“Temporary Geotextile”, CYS

“Temporary Seed Mixture”, LBS

SP31 SUBGRADE TREATMENT

This work shall consist of construction of the subgrade as indicated in the detail drawing and in accordance with Section 207 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as

“Subgrade Treatment, Type I”, SYS

“Subgrade Treatment, Type IC”, SYS

“Subgrade Treatment, Type III”, SYS

SP32 STRUCTURAL BACKFILL

This work shall consist of the placement of structural backfill as indicated in the detail drawing and in accordance with Section 211 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the following pay items:

“Structure Backfill, Type 1”, CYS

“Structure Backfill, Type 2”, CYS

“Structure Backfill, Type 3”, CYS

SP33 GEOGRID, TYPE 1A

This work shall consist of the placement of structural backfill as indicated in the detail drawing and in accordance with Section 214 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the following pay item:

“Geogrid, Type 1A”, SYS

SP34 COMPACTED AGGREGATE, NO. 53, BASE

This work shall consist of placement of Compacted Aggregate, No. 53, Base for shoulders as shown in the detail drawings and in accordance with Section 301 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as “Compacted Aggregate, No. 53, Base” TON. “Compacted

Aggregate, No. 53, Base (Undistributed for Poor Soils)” TON, will only be used, as directed by the Engineer, to replace poor soils that have been excavated.

SP35 DENSE GRADED SUBBASE

This work shall consist of placement of Dense Graded Subbase as shown in the detail drawings and in accordance with Section 302 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as “Dense Graded Subbase” CYS.

SP36 COMPACTED AGGREGATE, NO. 53

This work shall consist of placement of Compacted Aggregate, No. 53 as shown in the detail drawings and in accordance with Section 303 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as “Compacted Aggregate, No. 53” TON.

SP37 QC/QA, HMA, Pavement

This work shall consist of placement of QC/QA HMA as shown in the detail drawings and in accordance with Section 401 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the following pay items:

“QC/QA-HMA, 2, 64, Surface, 9.5mm” TON

“QC/QA-HMA, 2, 64, Intermediate, 19.0 mm” TON

“QC/QA-HMA, 2, 64, Base, 25.0 mm” TON

SP38 HMA JOINT ADHESIVE

This work shall consist of HMA Joint Adhesive placement in accordance with Section 401 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the following pay items:

“Joint Adhesive, Surface” LFT

“Joint Adhesive, Intermediate” LFT

SP39 ASPHALT FOR TACK COAT

This work shall be completed in accordance with Section 406 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as “Asphalt for Tack Coat” SYS.

SP40 GUARDRAIL, TRANSITION

This work shall consist of installation of “Guardrail, Transition, Type TGS-1” as indicated in the detail drawing and in accordance with Section 601 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as “Guardrail, Transition, Type TGS-1”, Each.

SP41 GUARDRAIL TERMINAL SYSTEM, W-BEAM, CURVED, 4

This work shall consist of installation of Curved Terminal Guardrail Systems as indicated in the detail drawing and in accordance with Section 601 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as “Guardrail Terminal System, W-Beam, Curved, 4”, Each.

SP42 GUARDRAIL END TREATMENT, OS

This work shall consist of installation of “Guardrail End Treatment, OS” as indicated in the detail drawing and in accordance with Section 601 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as “Guardrail End Treatment, OS”, Each.

SP43 GUARDRAIL, W BEAM, 6 FT. 3 IN. SPACING

This work shall consist of installation of “Guardrail, W Beam, 6 ft. 3in. Spacing” as indicated in the detail drawing and in accordance with Section 601 of the INDOT Standard Specifications.

All guardrail, posts, accessories, fittings and hardware shall be in accordance with Sections 910.09, 910.10 and 910.11 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the pay item identified as “Guardrail, W Beam, 6 ft. 3in. Spacing”, LFT.

SP44 REINFORCED CONCRETE BRIDGE APPROACH, 10 IN

This work shall consist of construction of the reinforced concrete bridge approach as indicated in the detail drawing and in accordance with Section 609 of the INDOT Standard Specifications.

All labor, material, equipment, any necessary formwork, supervision and other related work required to complete this work shall be included in the pay item identified as “Reinforced Concrete Bridge Approach, 10 in”, SYS.

SP45 HMA FOR APPROACHES

This work shall consist of placement of HMA for Approaches as shown in the detail drawing and in accordance with Section 610 of the INDOT Standard Specifications.

All labor, material, equipment, supervision and other related work required to complete this work shall be included in the following pay items:

“HMA for Approaches, Type B”, TON

SP46 MAILBOX ASSEMBLY, SINGLE

This work shall consist of installation of a new mailbox in accordance with Section 611 of the INDOT

Standard Specifications.

All labor, material, equipment, and supervision required to complete this work shall be included in the pay item identified as “Mailbox Assembly, Single”, EACH.

SP47 MONUMENTS AND MARKERS

This work shall consist of the installation of a Monument Section Corner, Monuments, and Right of Way Markers in accordance with Section 615 of the INDOT Standard Specifications. Right of Way Markers shall be installed at each corner break in the proposed right of way as indicated in the detail drawings and/or as directed by the *ENGINEER.*

All labor, material, equipment, any necessary formwork, supervision and other related work required to complete this work shall be included in the following pay items:

“Monument Section Corner Install”, EACH”

“Right of Way Marker”, EACH

“Monument, B”, EACH

SP48 GEOTEXTILES

This work shall consist of installation of Geotextile as indicated in the detail drawing and/or as directed by the *ENGINEER* and in accordance with Section 616 of the INDOT Standard Specifications. Prior to placing geotextile, *CONTRACTOR* shall remove all vegetation from the placement area and provide sufficient pinning based on the Table 1 in Section 616.11 of the INDOT Standard Specifications.

All labor, material, equipment, and supervision required to complete this work shall be included in the pay item identified as “Geotextiles”, SYS.

SP49 RIPRAP

This work shall consist of placing revetment riprap to the minimum thickness and to the limits shown on the detail drawing and/or as directed by the *ENGINEER*, in accordance with Section 616 of the INDOT Standard Specifications.

All labor, material, equipment, any necessary formwork, supervision and other related work required to complete this work shall be included in the following pay items:

“Riprap, Revetment”, TON”

“Riprap, Class 1”, TON

SP50 SEEDING OUTSIDE CONSTRUCTION LIMITS

Areas which have been disturbed by construction and are outside the construction limits shall be seeded with seed mixture grass type 2 in accordance with Section 621.06(g) 2 of the INDOT Standard Specifications, or seed mixture legume type 2 in accordance with Section 621.06(h) 2 of the INDOT Standard Specifications, as directed.

No direct payment shall be made for this work, but shall be included in the cost of other items.

SP51 PERMANENT EROSION CONTROL

This work shall consist of all permanent erosion control and sediment control measures in accordance

with Section 621 of the INDOT Standard Specifications.

If the seeding is placed outside the seasonal limitation requirement per INDOT Specification. Warranty Bond shall include all operations necessary for re-installation, including re-installation of erosion control blankets as specified on the plans.

Payment for construction permanent erosion control measures and sediment control measures shall be in accordance with Section 621.14 of the INDOT Standard Specifications and shall be included in the following pay items:

“Mobilization and Demobilization for Seeding”, EACH

“Erosion Control Blanket”, SYS

“Permanent Turf Reinforcement Mat”, SYS

“Seed Mixture R”, LBS

“Mulching Material”, TON

“Water”, kGAL

“Fertilizer”, TON

SP52 PILES

This work shall consist of the testing and installation of piles as indicated in the detail drawings and/or as directed by the *ENGINEER* and in accordance with Section 701 of the INDOT Standard Specifications.

Weep holes shall be provided as indicated in the detail drawings and shall be smooth wall PVC pipes in accordance with Section 907 of the INDOT Standard Specifications. Open grate pipe caps shall be provided, and securely fastened, at both ends of all weep holes as directed by the *ENGINEER*.

In accordance with 701.05a, Test Piles shall be restruck within 48 hours.

All labor, material, equipment, weep holes with open grate pipe caps, and supervision required to complete this work shall be included in the following pay items:

“Pile, Steel Pipe, Epoxy Coated, 0.312 IN., 14 IN.”, LFT

“Conical Pile Tip, 14 IN.”, EACH

“Test Pile, Indicator, Production”, LFT

“Test Pile, Indicator, Restrike”, EACH

SP53 CONCRETE, C, SUBSTRUCTURE

This work shall consist of the construction of the substructure as indicated in the detail drawings and/or as directed by the *ENGINEER* and in accordance with Section 702 of the INDOT Standard Specifications.

All labor, material, equipment, and supervision required to complete this work shall be included in the pay item identified as “Concrete, C, Substructure”, CYS.

SP54 REINFORCING BARS

This work shall consist of the installation of the plain and epoxy coated reinforcing bars as indicated in the detail drawings and/or as directed by the *ENGINEER* and in accordance with Section 703 of the INDOT Standard Specifications.

All labor, material, equipment, and supervision required to complete this work shall be included in the following pay items:

“Reinforcing Bars, Epoxy Coated”, LBS
“Threaded Tie Bar Assembly, Epoxy Coated”, EACH

SP55 CONCRETE, C, SUPERSTRUCTURE

This work shall consist of the construction of the superstructure as indicated in the detail drawings and/or as directed by the *ENGINEER* and in accordance with Section 704 of the INDOT Standard Specifications.

All labor, material, equipment, and supervision required to complete this work shall be included in the pay item identified as “Concrete, C, Superstructure”, CYS.

SP56 RAILING, TS-1

This work shall consist of installation of the steel and concrete portions of the railing as indicated in the detail drawing and in accordance with Section 706 of the INDOT Standard Specifications.

All labor, material, equipment, and supervision required to complete this work shall be included in the pay item identified as “Railing, Steel, TS-1”, LFT.

SP57 SURFACE SEAL

This work shall consist the surface seal as indicated in the detail drawing and in accordance with Section 709 of the INDOT Standard Specifications.

All labor, material, equipment, and supervision required to complete this work shall be included in the pay item identified as “Surface Seal”, LS.

SP58 PIPE

This work shall consist of the construction of drainage pipes as shown on the detail drawing and in accordance with Section 715 of the INDOT Standard Specifications.

All labor, material, equipment, maintenance, and supervision required to complete this work shall be included in the following pay items:

“Pipe, Type 4, Circular, 6 IN.”, LFT
“Pipe, Type 4, Circular, 8 IN.”, LFT
“Pipe, Type 4, Circular, 10 IN.”, LFT
“Pipe, Type 4, Circular, 12 IN.”, LFT
“Pipe, Type 4, Circular, 30 IN.”, LFT
“Pipe, Type 1, Circular, 60 IN.”, LFT
“Pipe, Type 3, Circular, 15 IN.”, LFT
“Concrete Anchor, 60, IN”, EACH
“Pipe End Section, Diameter 15 IN.”, EACH

SP59 STRUCTURES

This work shall consist of the construction of drainage pipes as shown on the detail drawing and in accordance with Section 720 of the INDOT Standard Specifications.

All labor, material, equipment, maintenance, and supervision required to complete this work shall be included in the following pay items:

“Inlet, Type A2”, EACH

SP60 TRAFFIC CONTROL FOR CONSTRUCTION AND MAINTENANCE OPERATION

This work shall consist of furnishing, placing, and maintaining signs, barricades, temporary pavement markings, and other traffic control devices at construction and maintenance operations in accordance with Section 801 of the INDOT Standard Specifications.

All labor, material, equipment, and supervision required to complete this work shall be included in the following pay items:

“Road Closure Sign Assembly”, EACH

“Detour Route Marker Assembly”, EACH

“Construction Sign, A”, EACH

“Construction Sign, B”, EACH

“Construction Sign, C”, EACH

“Maintaining Traffic”, LSUM

“Barricade, III-A”, LFT

“Barricade, III-B”, LFT

SP61 SIGNS

This work shall consist of the removal and installation of posts and signs as indicated in the detail drawings and in accordance with Section 802 of the INDOT Standard Specifications.

All labor, material, equipment, and supervision required to complete this work shall be included in the following pay items:

“Sign Post, Square, 1, Reinforced Anchor Base”, LFT

“Sign, Sheet, With Legend, 0.100 In.”, SFT

SP62 PAVEMENT MARKINGS

This work shall consist of placing pavement markings as detailed in the plans or as directed by the *ENGINEER* and in accordance with Section 808 of the INDOT Standard Specifications.

All double-yellow centerline pavement markings shall consist of two separate 4-inch solid yellow lines separated by a 4-inch gap or as directed by the *ENGINEER*.

All labor, material, equipment, and supervision required to complete this work shall be in accordance with Section 808 of the INDOT Standard Specifications and shall be included in the following pay items:

“Line, Multi-Component, Solid, White, 4 in”, LFT

“Line, Multi-Component, Solid, Yellow, 4 in”, LFT

DIVISION A - CYNTHEANNE ROAD
OVER FRANK KEISER DRAIN
GEOTECHNICAL REPORT

GEOTECHNICAL EVALUATION
SMALL STRUCTURE 23034 IMPROVEMENTS
HAMILTON COUNTY, INDIANA

Prepared for

LOCHMUELLER GROUP, INC.
3502 WOODVIEW TRACE, SUITE 150
INDIANAPOLIS, INDIANA 46268

By

EARTH EXPLORATION, INC.
7770 WEST NEW YORK STREET
INDIANAPOLIS, INDIANA 46214-2988

JANUARY 7, 2016

January 7, 2016

Mr. Nick Batta, P.E.
Lochmueller Group, Inc.
3502 Woodview Trace, Ste. 150
Indianapolis, IN 46268



7770 West New York Street
Indianapolis, IN 46214-2988
317-273-1690 (FAX) 317-273-2250

2204 Yankee Street
Niles, MI 49120
269-262-4320 or 574-233-6820
(FAX) 269-262-4479

Re: Geotechnical Evaluation
Small Structure 23034 Improvements
Hamilton County, Indiana
EEI Project No. 1-15-401

Dear Nick:

We are pleased to submit our geotechnical evaluation for the above-referenced project. This report presents the results of our subsurface exploratory program and provides geotechnical recommendations for the proposed bridge and related improvements. As you are aware, the work for this project was authorized via a subagreement dated August 11, 2015. We are enclosing two paper copies for your review and distribution and can provide additional copies, if requested. In addition, a copy was sent via electronic mail. Unless you notify us otherwise, we will retain the soil samples from the exploratory program for 60 days and then discard them.

The opinions and recommendations submitted in this report are based, in part, on our interpretation of the subsurface information revealed at the exploratory locations as indicated on an attached plan. Understandably, this report does not reflect variations in subsurface conditions between or beyond these locations. Therefore, variations in these conditions can be expected, and fluctuation of the groundwater levels will occur with time. Other important limitations of this report are discussed in Appendix A.

PROJECT DESCRIPTION

We understand that the commissioners of Hamilton County are planning to replace an existing small structure (Small Structure 23034) carrying Cyntheanne Road over Frank Keiser Drain using local funds only. Based on plans provided by Lochmueller Group, Inc. (LGI), the existing structure consists of a 12x4 ft box culvert and headwalls, and is planned to be replaced by a 60-in. diameter pipe. An additional structure supported on deep foundations (i.e., driven piling) is planned to be constructed approximately 340 ft north (near Station 59+50) of the existing structure in order to convey additional flow. Roadway improvements are anticipated from Station 51+00 to 63+50 for a total project length of about 1,250 ft. These roadway improvements are generally anticipated to consist of widening the roadway to 12-ft lanes and 4-ft shoulders and raising the profile grade by up to 5 ft. In addition, up to 7 ft of earth cut and fill is anticipated to be required to establish roadside drainage ditches. Sideslopes are anticipated to be established at 3H:1V or flatter.

At this time, other information such as foundation reactions and construction schedule is not known. In the event that the nature, design or location of the proposed construction changes, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions are modified or confirmed in writing.

FIELD EXPLORATION AND LABORATORY TESTING

Subsurface conditions for the proposed improvements were explored by performing one culvert boring (designated CB-1) to a depth of 15 ft near the location of the structure to be replaced, two bridge borings (designated TB-1 and TB-2) to depths of 30 to 60 ft, and two roadway borings (designated RB-1 and RB-2) to a depth of 7½ ft. In addition, several hand auger soundings (designated HAS-1 through HAS-6) were performed in the existing roadside ditches. The number, depth, and location of the borings were determined by EEI. The exploratory locations were identified in the field by EEI personnel referencing the landmarks shown on preliminary plans provided by Lochmueller. Additionally, ground surface elevations at the exploratory locations were interpolated to the nearest 1-ft based on topographic information on the aforementioned plans. The locations and elevations should be considered accurate only to the degree implied by the methods used.

Exploratory field activities were performed by EEI on September 21, 2015 using truck-mounted equipment. In addition, Boring TB-1 was extended from a depth of 30 ft to 60 ft on December 21, 2015. In general, exploratory activities were performed using hollow-stem augers to advance the boreholes. Representative samples of the soil conditions were obtained at predetermined intervals using Standard Penetration Test (SPT) procedures (AASHTO T 206). After obtaining final groundwater observations, each borehole was backfilled with auger cuttings and a bentonite chip plug. In addition, the surface was restored with a concrete patch. Additional details of the drilling and sampling procedures are provided in Appendix B.

Following the exploratory activities, the soil samples were visually classified by an EEI engineering technician and later reviewed by an EEI geotechnical engineer. After visually classifying the soils, representative samples were selected and submitted for laboratory testing. These tests included: natural moisture content (AASHTO T 265); hand penetrometer readings (q_p); Atterberg limits (AASHTO T 89 and T 90); and loss-on-ignition (LOI, AASHTO T 267). The results of the tests are provided on the boring logs in Appendix C. For your information, soil descriptions on the boring logs are in general accordance with the AASHTO system and the INDOT Standard Specifications (ISS¹) (textural classification, e.g., sandy loam). The boring logs represent our interpretation of the individual samples and field logs and results of the laboratory tests. The stratification lines on the boring logs represent the approximate boundary between soil types; although, the transition may actually be gradual.

¹References the Indiana Department of Transportation (INDOT) Standard Specifications.

SITE CONDITIONS

Surface Conditions

The project is located in a rural area with adjacent properties consisting of agricultural and residential properties. Based on our observations and topographic information shown on the plans, the existing ground surface along the project centerline is gently sloping with grades ranging from about Elevation 833 to 841. The surface conditions at the boring locations consisted of about 10 to 12 in. of asphaltic concrete underlain by granular subbase ranging in thickness from 2 to 8 in. Hand auger soundings performed in the existing creek encountered 3 to 5 in. of sand and gravel in the creek bed, underlain by soft cohesive soil to a depth of 1½ to 2 ft. Hand auger soundings performed in the existing roadside ditches encountered up to 2 in. of topsoil underlain by cohesive soils, which were described as soft to a depth of about 6 to 8 in. below the existing ground surface.

Subsurface Conditions

The subsurface profile at the boring locations consisted of cohesive-type soils (i.e., clay loam, silty clay loam, silty loam, and loam) extending to depths ranging from 3 to 7½ ft (Elevation 826 to 836) below the existing ground surface. These conditions were underlain by granular soils (i.e., sandy loam, sand, and gravelly sand) to depths ranging from 16½ to 21 ft (Elevation 813 to 817½), and were underlain by cohesive-type soils (i.e., loam) to a depth of about 30 ft (Elevation 804). At the location of Boring TB-1, the loam was observed to be underlain by granular soil (i.e., sand and gravel and sandy loam) to a depth of 48½ ft (Elevation 785½). A layer of cohesive soil (i.e., clay loam) was observed below the granular soil to a depth of 58½ ft (Elevation 775½), and this layer was overlying a granular layer (i.e., sandy loam) that extended to the maximum depth explored (i.e., 60 ft, Elevation 774). It should be noted that up to 6 ft of the cohesive soils observed at the boring locations was described as fill or possible fill.

The consistency of the cohesive soils above a depth of about 7½ ft was typically stiff to hard based on hand penetrometer readings ranging from 1½ to 4¼ tons/sq ft (tsf), and moisture contents within these depths typically ranged from about 12 to 25 percent. Exceptions to this were noted at Borings CB-1 and TB-2, where relatively thin (i.e., 1½ to 2½ ft in thickness) layers were observed to be very soft to medium stiff based on hand penetrometer readings of ¼ and 1 tsf. Moisture contents at these locations were observed to be 37 to 55 percent, and the soil in the very soft layer at the location of Boring CB-1 was observed to contain about 7 percent organic matter.

The relative density of the granular soils above a depth of 30 ft was typically very loose to medium dense based on SPT N-values ranging from 4 to 25 blows/ft (bpf), though an isolated N-value of 61 bpf was observed at the location of Boring TB-2 near a depth of about 20 ft (Elevation 814). Below a depth of 30 ft, the relative density of the granular soils was generally medium dense to very dense based on SPT N-values in the range of 28 to 82 bpf. The consistency of the cohesive soils below a depth of 16 ft was generally very stiff to hard based on hand penetrometer readings of 3 tsf or greater, and moisture contents were on the order of 10 to 14 percent.

Groundwater Conditions

Groundwater level observations were made during and upon completion of the field activities and are noted at the bottom of the boring logs. Groundwater was observed upon completion at depths ranging from about 7 to 8½ ft (Elevation 825 to 827) below the existing ground surface. As additional input, review of the *Soil Survey of Hamilton County* indicated that the project area is prone to a seasonably high (perched) groundwater level within 1 ft of the existing ground surface. In addition, LGI has indicated that the area is prone to occasional flooding. It should be noted that groundwater levels either perched or piezometric can vary due to changes in precipitation, infiltration, run-off, level of water in the drain and nearby Mud Creek, and other hydrogeological factors.

DISCUSSION AND RECOMMENDATIONS

In general, the observed subsurface conditions are conducive for support of the roadway, embankment fill, bridge, and culvert improvements as planned, provided the subgrade is prepared as discussed herein. For the new single-span bridge planned near Station 59+50, consideration was given to utilizing geosynthetic reinforced soil (GRS) abutments, and the bottom of the foundations were planned to be established near Elevation 824. Wet granular soils were observed at the location of Borings TB-1 and TB-2 near Elevation 825 to 827. Due to anticipated constructability issues (e.g., dewatering, sheet piling, and potential subgrade preparation difficulty), GRS abutments were considered an unfavorable foundation alternative by the design team. We understand that consideration was also given to utilizing a four-sided box structure without wing walls, and that alternative was not feasible due to hydraulic concerns. As a result, we understand the new structure will consist of a single-span bridge supported by driven steel piling. Based on the subsurface conditions (interbedded cohesive and wet granular soil), we recommend that steel-encased concrete (SEC) pipe piles be utilized for support of the abutments. Refer to the following paragraphs for additional design and construction recommendations for the proposed improvements.

Subgrade Preparation

In all areas to receive new pavement components and new embankment fill, we recommend all topsoil, wet or soft near-surface soils, and existing pavement components be removed from within the construction limits. After removal and where feasible, we recommend that exposed soils in pavement areas and areas to receive fill be proof-rolled in accordance with the ISS, Section 203.26. It should be noted that the near-surface cohesive soils are moisture-sensitive and will soften due to exposure and repeated construction traffic. We recommend that removal activities only occur in areas to be developed and subgrade exposure be limited where feasible.

Where soft/yielding conditions are encountered at the subgrade (such as those observed in the existing ditches), we recommend that they be aerated (via continuous discing and drying to reduce moisture content) and recompacted. Depending on the weather conditions at the time of construction, improvement via discing and drying may not be feasible. If this is the case, we anticipate that undercutting and replacing will be necessary to achieve a suitable subgrade for embankment fill placement. We recommend that quantities be included in the contract for undercutting and replacement with granular fill (e.g., "B" Borrow), and a high-modulus biaxial geogrid (Type IA) to be

used if necessary. For estimating purposes, we recommend considering an undercut depth of 12 in. over 20 percent of the area beyond the existing shoulders to receive new embankment fill. The final decision regarding stabilization should be made at the time of construction, based on the observed actual conditions.

Earthwork Considerations

Considering fill heights of up to 7 ft, standard embankment construction practices outlined in the ISS and with a subgrade prepared as discussed above should provide adequate support for embankment construction. We recommend that borrow used to raise grades be placed in loose lift thicknesses not exceeding 8 in. and be compacted to no less than 95 percent of the maximum density obtained in accordance with AASHTO T 99. Except for near-surface soils containing organic matter (e.g., topsoil), the in-situ soils observed at the test boring locations are suitable for reuse as embankment fill. However, the cohesive soil will generally require conditioning prior to compaction. We recommend conditioning be accomplished by continuous discing of the soils to reduce the moisture content and break down soil clods. Under some climatic conditions, such as cold or rainy weather, or in confined areas, adequate moisture conditioning may be difficult or impossible to achieve, and in this case, imported granular fill could be required to expedite construction activities. Alternatively, chemical drying of the soils (ISS 217) could be considered to aid in the drying process only after an attempt has been made per the ISS to dry the soils conventionally. The need for this is anticipated to be contingent on the project schedule and the conditions encountered during construction. Consideration could be given to including quantities in the contract for chemical drying.

We recommend that benches be cut into existing slopes steeper than 4H:1V before fill placement so as to key the new fill into the slope. In our opinion, benches having a minimum width of 10 ft should be cut into the slope before new fill is placed. Where 10-ft wide benches are not feasible due to shallow embankment heights, 4-ft wide benches (i.e., minimum) may be considered. Scarifying of the slope will also aid in keying the new fill into the slope. Provided the subgrades are prepared and fill placed and compacted as discussed above, we do not take exception to sideslopes of 3H:1V and do not have concern regarding global instability.

Bridge Foundation Considerations

Given the presence of wet granular seams and layers, we recommend that a displacement-type pile be utilized in lieu of an HP-shape. This is due to the tendency of an H-Pile to "run" during driving in these conditions. We recommend that driven SEC pipe piles be used for support of the bridge. We understand that an LRFD approach will be used for bridge design. For our analysis, we considered an SEC 14 in. x 0.312 in. shape. It is anticipated that the piles will achieve their capacity through a combination of resistance along the shaft and at the tip. The information provided in Table 1 considers design soil resistances (R_R) based on assumed service loads and an average structural load factor of 1.4. More specifically, we considered service loads of 40, 50, and 60 tons (factored loads of 112, 140, and 168 kips, respectively). A computer program entitled *APILE* was used to perform the analysis. The estimated pile tip elevations provided in the table are based on an assumed pile cap elevation of 830. Due to the hard cohesive soils and presence of cobbles, we recommend that appropriately sized conical pile tips (in accordance with ISS 915.01) be utilized during driving to reduce the risk of damage to the tips.

Table 1: Summary of Design and Pile Driving Resistances

Pile Size and Type	Bent Nos. 1 and 2		
	SEC 14 in. x 0.312 in.		
Design Soil Resistance - R_R (kips)	112	140	168
Resistance Factor ϕ_{dyn} *	0.55		
Downdrag Load - DD (kips)	Negligible	Negligible	Negligible
Nominal Soil Resistance - R_n (kips)	204	255	305
Downdrag Friction - R_{sdd} (kips)	0	0	0
Scour Zone Friction - $R_{s scour}$ (kips)	0	0	0
Nominal Driving Resistance - R_{ndr} (kips)	204	255	305
Estimated Pile Tip Elevation Range	807	803	801
Note: For bents with four or fewer piles, the resistance factor should be reduced by 20% in accordance with AASHTO C10.5.5.2.3 and INDOT design manual. In either case, EEI should be contacted to verify the required driving resistance.			

The pile tips provided in Table 1 are estimates based on the results of our analysis. It should be noted that difficult driving conditions are anticipated below about Elevation 815, and driving resistances may be obtained at shallower depths.

Seismic Considerations

For your consideration of seismic loads and in accordance with Section 3.10.3.1 of the AASHTO LRFD Bridge Design Specifications, 2012, it is our opinion that the subsurface profile most closely resembles a Site Class D. The site class along with the peak ground acceleration coefficient is used to determine the Seismic Zone. Using a Site Class D and the peak ground acceleration ($PGA=0.045$) results in a seismic response parameter (S_{D1}) of 0.112. From Table 3.10.6-1, an S_{D1} of 0.112 indicates Seismic Zone 1.

Culvert Considerations

At this time, the existing box culvert near Station 56+10 is anticipated to be removed and replaced with a 60-in. diameter pipe established near Elevation 828 to 829. In general, the placement of pipe is not anticipated to increase the load on the underlying soil in excess of the existing overburden or planned fill. However, it is important to provide adequate support via preparation of the subgrade so as to reduce the risk of movement and subsequent bending. Based on our observations at the location of Boring CB-1, stiff cohesive soil is anticipated at the invert of the structure. This stiff cohesive soil was underlain by a layer 1½ ft in thickness of very soft soil containing organic matter. In addition, the soil at the hand auger sounding locations near the existing culvert was observed to be soft to a depth of 1½ to 2 ft (Elevation 827 to 828½). Where soft cohesive soils are encountered at the subgrade elevation, we recommend a minimum undercut of 2 ft and replacement with coarse aggregate if necessary. For this purpose we recommend the use of INDOT No. 2 or No. 5 stone worked into the subgrade capped with structure backfill. If No. 2 or No. 5 stone is required at the subgrade, a geotextile separator layer will be required above the stone. Since the drainage structure will be located beneath or within the influence of the roadway and for ease of fill placement and compaction, the excavation and areas adjacent to and over the pipes and culverts should be backfilled with structure backfill. We recommend that the fill be compacted to 100 percent of

maximum dry density obtained in accordance with AASHTO T 99. Hand- or remote-guided vibratory compactors are recommended for compacting the bedding material, if necessary, and material on either side of the pipe or culvert. The first several lifts of backfill should also be compacted with small vibratory compactors to assure proper compaction is achieved and to prevent damage to the element from heavier, high-energy compactors. In addition, periodic field density tests by EEI are recommended during backfill placement to determine the adequacy of compactive effort.

Pavement Design Considerations

The pavement subgrade is anticipated to consist of naturally occurring cohesive soils as observed at the test boring locations or of embankment fill used to raise the existing grades. Provided the subgrades are prepared according to the procedures discussed in the Subgrade Preparation section, the fill should provide adequate support for the pavement. Based on the anticipated subgrade conditions, it is our opinion that pavement design will be controlled by the cohesive soils or engineered fill if cohesive-type soils similar to those encountered at the boring locations are used.

Table 2: Summary of Pavement Design Parameters

M _r for Improved Subgrade	4,500 psi
M _r for Natural Subgrade	3,000 psi
Subgrade Material	Clay Loam (A-6)
Depth to Water	3 ft
Subgrade Treatment (Station 51+00 to 52+50 and 62+50 to 63+50)	Type IC
Subgrade Treatment (Station 52+50 to 62+50)	Type I

As an alternate to the subgrade treatment types recommended in the above table, Subgrade Treatment Type IB could be considered for the entire length of the project. Water infiltration into cohesive subgrade soils can reduce the life of a pavement section. Since the existing surficial soils have a low permeability, we would anticipate that any water which may infiltrate the subgrade would affect the long-term performance of the pavement. While subsurface drains would, in our opinion, be beneficial for the long-term performance of the pavement, they may not be warranted unless future improvements to Cynthianne Road are planned and would therefore need to be perpetuated.

Excavations and Dewatering

We anticipate that excavations will require: 1) cut slopes adequate to prevent cave-ins/subsidence; or 2) excavation support for safe construction operation. All excavations should conform with Occupational Safety and Health Administration (OSHA) requirements (i.e., 29 CFR Part 1926). Additionally, soil should not be stockpiled immediately adjacent to the top of the excavations. The Contractor is solely responsible for constructing and maintaining stable excavations.

As previously discussed, groundwater was observed about 7 to 8½ ft below the existing ground surface during and upon completion of drilling activities. Furthermore, this area is known to be prone to frequent flooding, and water frequently flows over the existing roadway during rain events. Dewatering efforts will be dependent upon several factors including the pile cap elevations and weather conditions at the time of construction. For pile cap excavations adjacent to the ditch,

diversion via earthen cofferdams and conventional dewatering measures such as adequately sized sump pumps in combination with collection trenches and sumps may be adequate depending on the weather conditions at the time of construction.

CONCLUDING REMARKS

In closing, we recommend that EEI be provided the opportunity to review the final design and project specifications to confirm that earthwork and foundation requirements have been properly interpreted and implemented in the design and specifications. We also recommend that EEI be retained to provide construction observation services during the earthwork and foundation construction phases of the projects. This will allow us to verify that the construction proceeds in compliance with the design concepts, specifications and recommendations. It will also allow design changes to be made in the event that subsurface conditions differ from those anticipated.

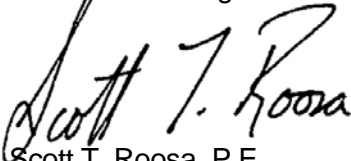
We appreciate the opportunity to provide our services to you on this project. Please contact our office if you have any questions or need further assistance with the project.

Sincerely,

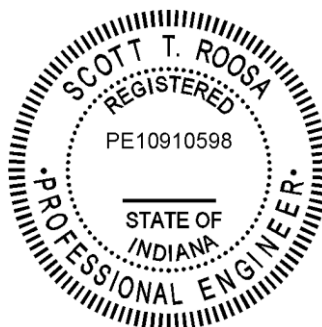
EARTH EXPLORATION, INC.



Kyle L. Zak, E.I.
Geotechnical Engineer



Scott T. Roosa, P.E.
Senior Geotechnical Engineer



Attachments –

- APPENDIX A - Important Information about Your Geotechnical Report
- APPENDIX B - Field Methods for Exploring and Sampling Soils and Rock
- APPENDIX C - Exploratory Location Plan (Drawing No. 1-15-401.B1)
 - Log of Test Boring – General Notes
 - Log of Test Boring (5)
 - Summary of Hand Auger Soundings

APPENDIX A

IMPORTANT INFORMATION ABOUT YOUR
GEOTECHNICAL ENGINEERING REPORT

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time to perform additional study.* Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910

Telephone: 301/565-2733 Facsimile: 301/589-2017

e-mail: info@geoprofessional.org www.geoprofessional.org

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APPENDIX B

FIELD METHODS FOR EXPLORING AND SAMPLING SOILS AND ROCK

FIELD METHODS FOR EXPLORING AND SAMPLING SOILS AND ROCK

A. Boring Procedures Between Samples

The boring is extended downward, between samples, by a hollow stem auger (AASHTO* Designation T251), continuous flight auger, driven and washed-out casing, or rotary boring with drilling mud or water.

B. Standard Penetration Test and Split-Barrel Sampling of Soils

(AASHTO* Designation: T206)

This method consists of driving a 2-in. outside diameter split-barrel sampler using a 140-lb weight falling freely through a distance of 30 in. The sampler is first seated 6 in. into the material to be sampled and then driven 12 in. The number of blows required to drive the sampler the final 12 in. is recorded on the Log of Test Boring and known as the Standard Penetration Resistance or N-value. Recovered samples are first classified as to texture by the field personnel. Later in the laboratory, the field classification is reviewed by a geotechnical engineer who observes each sample.

C. Thin-walled Tube Sampling of Soils

(AASHTO* Designation: T207)

This method consists of hydraulically pushing a 2-in. or 3-in. outside diameter thin wall tube into the soil, usually cohesive types. Relatively undisturbed samples are recovered.

D. Soil Investigation and Sampling by Auger Borings

(AASHTO* Designation: T203)

This method consists of augering a hole and removing representative soil samples from the auger flight or bucket at 5-ft intervals or with each change in the substrata. Relatively disturbed samples are obtained and its use is therefore limited to situations where it is satisfactory to determine approximate subsurface profile.

E. Diamond Core Drilling for Site Investigation

(AASHTO* Designation: T225)

This method consists of advancing a hole in rock or other hard strata by rotating downward a single tube or double tube core barrel equipped with a cutting bit. Diamond, tungsten carbide, or other cutting agents may be used for the bit. Wash water is used to remove the cuttings. Normally, a 3-in. outside diameter by 2-in. inside diameter coring bit is used unless otherwise noted. The rock or hard material recovered within the core barrel is examined in the field and laboratory. Cores are stored in partitioned boxes and the length of recovered material is expressed as a percentage of the actual distance penetrated.

* American Association of State Highway and Transportation Officials, Washington D.C.

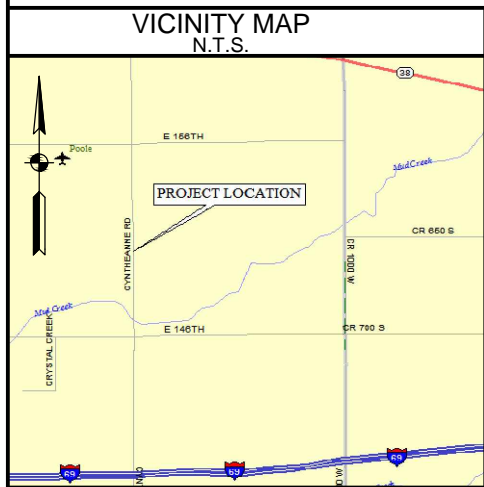
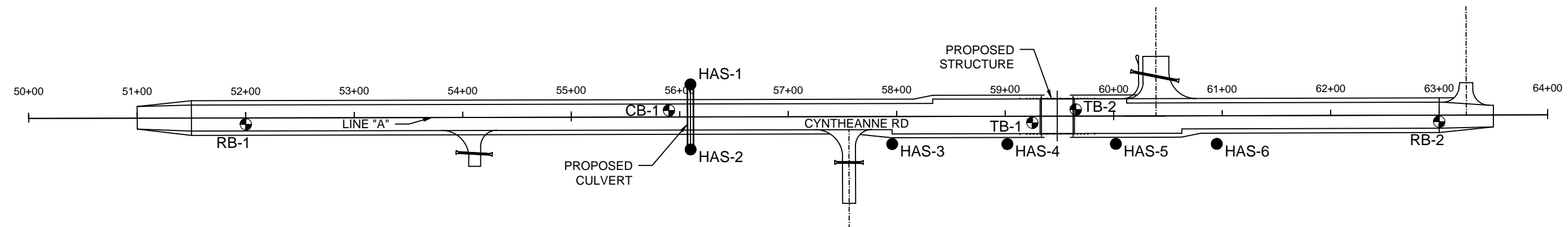
APPENDIX C




EXPLORATORY LOCATION PLAN
(Drawing No. 1-15-401.B1)

LOG OF TEST BORING - GENERAL NOTES

LOG OF TEST BORING (5)

SUMMARY OF HAND AUGER SOUNDINGS



LEGEND	NOTES	EXPLORATORY LOCATION PLAN	PROJECT ENG: STR	
RB-1  Test Boring Location and Designation	<ol style="list-style-type: none">1. Base map developed from an electronic file provided by Lochmueller Group, Inc. on October 28, 2015.2. Vicinity map generated using commercially-available software by DeLorme (Street Atlas USA ver. 8.0).3. Refer to the Log of Test Boring (5) and Summary of Hand Auger in Appendix C for a description of the subsurface conditions encountered at the exploratory locations.4. Borings were located in the field by Earth Exploration, Inc. on September 3, 2015.5. Ground surface elevations at the exploratory locations were interpolated to the nearest 1 ft based on topographic information provided on the previously mentioned plan.6. Exploratory locations are approximate.	PROJECT: Small Structure 23034 Improvements	APPROVED BY: RDO	
HAS-1  Hand Auger Sounding Location and Designation		LOCATION: Hamilton County, Indiana	DRAWN BY: JBF	
		CLIENT: Lochmueller Group, Inc.	DATE AND TIME: 11/11/15	
		EEI PROJECT NO.: 1-15-401	DRAWING NO.: 1-15-401.B1	
		SCALE: 1" = 100'		

LOG OF TEST BORING – GENERAL NOTES

DESCRIPTIVE CLASSIFICATION

GRAIN SIZE TERMINOLOGY

Soil Fraction	Particle Size	US Standard Sieve Size
Boulders	Larger than 75 mm	Larger than 3"
Gravel	4.76 mm to 75 mm	#10 to 75 mm
Sand: Coarse	2.00 to 4.76 mm	#40 to #10
Fine	0.075 to 0.42 mm	#200 to #40
Silt	0.002 to 0.075 mm	Smaller than #200
Clay	Smaller than 0.002 mm	Smaller than #200

GENERAL TERMINOLOGY

Physical Characteristics
- Color, moisture, grain shape
 fineness, etc.
Major Constituents
- Clay silt, sand, gravel
Structure
- Laminated, varved, fibrous,
 stratified, cemented, fissured,
 etc.
Geologic Origin
- Glacial, alluvial, eolian,
 residual, etc.

RELATIVE PROPORTIONS OF COHESIONLESS SOILS

Term	Defining Range by % of Weight
Trace	1 – 10%
Little	11 – 20%
Some	21 – 35%
And	36 – 50%

ORGANIC CONTENT BY COMBUSTION METHOD

Soil Description	LOI
w/ organic matter	4 – 15 %
Organic Soil (A-8)	16 – 30%
Peat (A-8)	More than 30%

The penetration resistance, N, is the summation of the number of blows required to effect two successive 6-in. penetrations of the 2-in. split-barrel sampler. The sampler is driven with a 140-lb weight falling 30 in. and is seated to a depth of 6 in. before commencing the standard penetration test.

SYMBOLS

DRILLING AND SAMPLING

AS	–	Auger Sample
BS	–	Bag Sample
C	–	Casing Size 2½", NW, 4", HW
COA	–	Clean-Out Auger
CS	–	Continuous Sampling
CW	–	Clear Water
DC	–	Driven Casing
DM	–	Drilling Mud
FA	–	Flight Auger
FT	–	Fish Tail
HA	–	Hand Auger
HSA	–	Hollow Stem Auger
NR	–	No Recovery
PMT	–	Borehole Pressuremeter Test
PT	–	3" O.D. Piston Tube Sample
PTS	–	Peat Sample
RB	–	Rock Bit
RC	–	Rock Coring
REC	–	Recovery
RQD	–	Rock Quality Designation
RS	–	Rock Sounding
S	–	Soil Sounding
SS	–	2" O.D. Split-Barrel Sample
2ST	–	2" O.D. Thin-Walled Tube Sample
3ST	–	3" O.D. Thin-Walled Tube Sample
VS	–	Vane Shear Test
WPT	–	Water Pressure Test

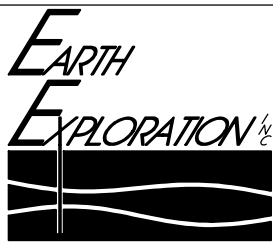
LABORATORY TESTS

q _p	–	Penetrometer Reading, tsf
q _u	–	Unconfined Strength, tsf
W	–	Moisture Content, %
LL	–	Liquid Limit, %
PL	–	Plastic Limit, %
PI	–	Plasticity Index
SL	–	Shrinkage Limit, %
LOI	–	Loss on Ignition, %
γ _d	–	Dry Unit Weight, pcf
pH	–	Measure of Soil Alkalinity/Acidity

WATER LEVEL MEASUREMENT

BF	–	Backfilled upon Completion
NW	–	No Water Encountered

Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.



LOG OF TEST BORING

Project **Small Structure 23034 Improvements**
 Location **Hamilton County, Indiana**
 Client **Lochmueller Group, Inc.**
 7770 West New York Street - Indianapolis, Indiana 46214
 317-273-1690 / 317-273-2250 (Fax)

Boring No. **CB-1**
 Elevation **833**
 Datum **NAVD 88**
 EEI Proj. No. **1-15-401**
 Sheet **1** of **1**

Project No. --- Station **55+90** Weather **Sunny** Driller **B.J.**
 Struct. No. --- Offset **6 ft Lt. "A"** Temp. **80° F** Inspector ---

SAMPLE				Depth ft Elev	DESCRIPTION/CLASSIFICATION and REMARKS	SOIL PROPERTIES						
No.	Type	Rec %	N Value			q _p tsf	q _u tsf	γ _d pcf	W %	LL %	PL %	PI %
					ASPHALTIC CONCRETE, 12 in.							
SS-1	X	90	6		GRANULAR SUBBASE (visual)	1½			17.1			
				830								
SS-2	X	0	12		CLAY LOAM, stiff, brown (possible fill)	---			---			
				5								
SS-3	X	90	4		SILTY CLAY LOAM, very soft, dark gray, with organic matter, LOI = 6.8 percent	¼			55.0			
				825								
SS-4	X	90	15									
				10								
SS-5	X	90	25		GRAVELLY SAND, medium dense, moist to wet at 8 ft, gray							
				820								
SS-6	X	90	19									
				15								
					End of Boring at 15 ft							

WATER LEVEL OBSERVATIONS

GENERAL NOTES

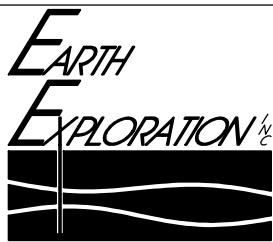
Depth ft ▽ While Drilling ▽ Upon Completion ▽ After Drilling

To Water 8½ 8 BF

To Cave-in 11

Start 9/21/15 End 9/21/15 Rig CME 75
 Drilling Method 3¼" I.D. HSA Truck
 Remarks Backfilled with auger cuttings, bentonite chips and concrete patch at surface.

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.




LOG OF TEST BORING

Project **Small Structure 23034 Improvements**
Location **Hamilton County, Indiana**
Client **Lochmueller Group, Inc.**
7770 West New York Street - Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)

Boring No. **RB-1**
Elevation **836**
Datum **NAVD 88**
EEI Proj. No. **1-15-401**
Sheet **1** of **1**

Project No. --- Station **52+00** Weather **Sunny** Driller **B.J.**
Struct. No. --- Offset **6 ft Rt. "A"** Temp. **80° F** Inspector ---

SAMPLE					DESCRIPTION/CLASSIFICATION and REMARKS	SOIL PROPERTIES							
No.	Type	Rec %	N Value	Depth ft Elev		q _p tsf	q _u tsf	γ _d pcf	W %	LL %	PL %	PI %	
					 ASPHALTIC CONCRETE, 10 in.								
SS-1	X	90	7	835	GRANULAR SUBBASE (visual) CLAY LOAM, very stiff, brown, with sand seams (possible fill)	3½			12.6	28	16	12	
SS-2	X	90	12			2½			16.3				
				5									
					CLAY LOAM, very stiff to hard, brown, with sand seams								
				830									
SS-3	X	90	14			4¼			16.0				
					End of Boring at 7.5 ft								

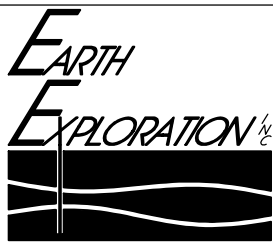
WATER LEVEL OBSERVATIONS

GENERAL NOTES

Depth ft ▽ While Drilling ▼ Upon Completion ▽ After Drilling
To Water **NW** **NW** **BF**
To Cave-in **7**

Start **9/21/15** End **9/21/15** Rig **CME 75**
Drilling Method **3¼" I.D. HSA** Truck
Remarks **Backfilled with auger cuttings, bentonite chips and concrete patch at surface.**

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.



LOG OF TEST BORING

Project **Small Structure 23034 Improvements**
Location **Hamilton County, Indiana**
Client **Lochmueller Group, Inc.**
7770 West New York Street - Indianapolis, Indiana 46214
317-273-1690 / 317-273-2250 (Fax)

Boring No. **RB-2**
Elevation **839**
Datum **NAVD 88**
EEI Proj. No. **1-15-401**
Sheet **1** of **1**

Project No. --- Station **63+00** Weather **Sunny** Driller **B.J.**
Struct. No. --- Offset **6 ft Rt. "A"** Temp. **80° F** Inspector ---

SAMPLE				Depth ft Elev	DESCRIPTION/CLASSIFICATION and REMARKS	SOIL PROPERTIES						
No.	Type	Rec %	N Value			q_p tsf	q_u tsf	γ_d pcf	W %	LL %	PL %	PI %
SS-1	X	90	9	835	ASPHALTIC CONCRETE, 10 in.							
					GRANULAR SUBBASE							
					CLAY LOAM, stiff, brown (possible fill)				11.6			
SS-2	X	90	8	835	SANDY LOAM, loose, moist							
SS-3	X	90	8									
End of Boring at 7.5 ft												

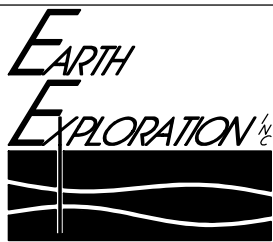
WATER LEVEL OBSERVATIONS

GENERAL NOTES

Depth ft ▽ While Drilling ▼ Upon Completion ▽ After Drilling
To Water **NW** **NW** **BF**
To Cave-in **7 1/2**

Start **9/21/15** End **9/21/15** Rig **CME 75**
Drilling Method **3 1/4" I.D. HSA** Truck
Remarks **Backfilled with auger cuttings,
bentonite chips and concrete patch at surface.**

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.



LOG OF TEST BORING

Project **Small Structure 23034 Improvements**
 Location **Hamilton County, Indiana**
 Client **Lochmueller Group, Inc.**
 7770 West New York Street - Indianapolis, Indiana 46214
 317-273-1690 / 317-273-2250 (Fax)

Boring No. **TB-1**
 Elevation **834**
 Datum **NAVD 88**
 EEI Proj. No. **1-15-401**
 Sheet **1** of **2**

Project No. **---** Station **59+25** Weather **Sunny** Driller **B.J.**
 Struct. No. **Hamilton SS 23034** Offset **6 ft Rt. "A"** Temp. **80° F** Inspector **---**

SAMPLE				Depth ft Elev	DESCRIPTION/CLASSIFICATION and REMARKS	SOIL PROPERTIES						
No.	Type	Rec %	N Value			q _p tsf	q _u tsf	γ _d pcf	W %	LL %	PL %	PI %
					ASPHALTIC CONCRETE, 11 in.							
SS-1	X	90	7		GRANULAR SUBBASE	2½			25.1			
					SILTY CLAY LOAM, very stiff, brown							
SS-2	X	90	4	830	SANDY LOAM, very loose, moist, brown							
				5								
SS-3	X	90	21	825	SAND, medium dense, moist to wet, brown							
SS-4	X	90	15	825	GRAVELLY SAND, medium dense, wet, gray							
				10								
SS-5	X	90	21									
SS-6	X	90	23	820	LOAM, hard to very stiff, gray, with sand seams below 29 ft							
				15								
SS-7	X	90	25			4¼			9.7			
SS-8	X	90	41	815	SAND AND GRAVEL, dense, wet, gray	>4½			9.5			
				20								
SS-9	X	90	32	810		>4½			10.2			
				25								
SS-10	X	90	39	805		3			13.4			
				30								

Continued Next Page

WATER LEVEL OBSERVATIONS

GENERAL NOTES

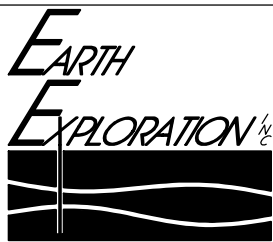
Depth ft ▽ While Drilling ▽ Upon Completion ▽ After Drilling

To Water 8½ 7 BF

To Cave-in 22½

Start 9/21/15 End 9/21/15 Rig CME 75
 Drilling Method 3¼" I.D. HSA Truck
 Remarks Backfilled with auger cuttings, bentonite chips and concrete patch at surface.

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.



LOG OF TEST BORING

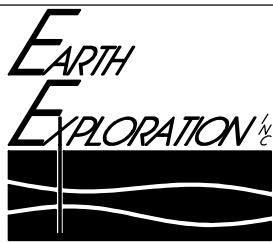
Project **Small Structure 23034 Improvements**
 Location **Hamilton County, Indiana**
 Client **Lochmueller Group, Inc.**
 7770 West New York Street - Indianapolis, Indiana 46214
 317-273-1690 / 317-273-2250 (Fax)

Boring No. **TB-1**
 Elevation **834**
 Datum **NAVD 88**
 EEI Proj. No. **1-15-401**
 Sheet **2** of **2**

Project No. **---** Station **59+25** Weather **Sunny** Driller **B.J.**
 Struct. No. **Hamilton SS 23034** Offset **6 ft Rt. "A"** Temp. **80° F** Inspector **---**

SAMPLE					DESCRIPTION/CLASSIFICATION and REMARKS	SOIL PROPERTIES						
No.	Type	Rec %	N Value	Depth ft Elev		q _p tsf	q _u tsf	γ _d pcf	W %	LL %	PL %	PI %
SS-11	X	90	39	800	SAND AND GRAVEL, dense, wet, gray							
				35								
SS-12	X	90	43	795	SANDY LOAM, dense to medium dense, wet, with occasional sand seams							
				40								
SS-13	X	90	28	790	CLAY LOAM, hard, brown, possible cobble or boulder near 48 ft							
				45								
SS-14	X	55	50/5	785	CLAY LOAM, hard, brown, possible cobble or boulder near 48 ft	3			14.1			
				50								
SS-15	X	90	69	780	CLAY LOAM, hard, brown, possible cobble or boulder near 48 ft	>4½			11.1			
				55								
SS-16	X	105	82/0.9	775	SANDY LOAM, very dense, wet, brown, with wet sand seams							
				60	End of Boring at 60 ft							
					Boring advanced from 30 to 60 ft on 12/21/15							

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.



LOG OF TEST BORING

Project **Small Structure 23034 Improvements**
 Location **Hamilton County, Indiana**
 Client **Lochmueller Group, Inc.**
 7770 West New York Street - Indianapolis, Indiana 46214
 317-273-1690 / 317-273-2250 (Fax)

Boring No. **TB-2**
 Elevation **834**
 Datum **NAVD 88**
 EEI Proj. No. **1-15-401**
 Sheet **1** of **1**

Project No. **---** Station **59+65** Weather **Sunny** Driller **B.J.**
 Struct. No. **Hamilton SS 23034** Offset **6 ft Lt. "A"** Temp. **80° F** Inspector **---**

SAMPLE				Depth ft Elev	DESCRIPTION/CLASSIFICATION and REMARKS	SOIL PROPERTIES						
No.	Type	Rec %	N Value			q _p tsf	q _u tsf	γ _d pcf	W %	LL %	PL %	PI %
					ASPHALTIC CONCRETE, 10 in.							
SS-1	X	90	9		GRANULAR SUBBASE (visual)	2½			14.4			
					LOAM, very stiff, brown (possible fill)							
SS-2	X	90	4	830		1			37.3			
					SILTY LOAM, medium stiff, dark gray							
SS-3	X	90	13									
					SANDY LOAM, medium dense, moist							
SS-4	X	90	12	825								
SS-5	X	90	12									
SS-6	X	90	13	820								
					GRAVELLY SAND, medium dense to very dense, wet, gray							
SS-7	X	90	14									
SS-8	X	90	61	815								
SS-9	X	90	60	810		>4½			10.4			
					LOAM, hard, gray							
SS-10	X	90	50	805		>4½			9.6			
				30	End of Boring at 30 ft							

WATER LEVEL OBSERVATIONS

GENERAL NOTES

Depth ft ▽ While Drilling ▼ Upon Completion ▽ After Drilling

To Water 8½ 8½ BF

To Cave-in 13½

Start 9/21/15 End 9/21/15 Rig CME 75
 Drilling Method 3¼" I.D. HSA Truck
 Remarks Backfilled with auger cuttings, bentonite chips and concrete patch at surface.

The stratification lines represent the approximate boundary between soil/rock types and the transition may be gradual.



SUMMARY OF HAND AUGER SOUNDINGS

Project: Small Structure 23034 Improvements
Location: Hamilton County, IN
Client: Lochmueller Group, Inc.
EEL Project No.: 1-15-401

Sounding No.	Station, Offset, Elevation	Elevation	Description - All Classifications are visual Depth Interval (ft)
HAS-1	56+10 30' Lt. Line "A" 829	830	0 - 3" 3" - 3' Sand and Gravel, brown, wet Clay Loam, soft to 2 ft, gray
HAS-2	56+10 30' Rt. Line "A" 830	830	0 - 5" 5" - 3' Sand and Gravel, brown, wet Clay Loam, soft to 1½ ft, gray
HAS-3	57+95 25' Rt. Line "A" 832	832	0 - 2" 2" - 2' Topsoil Clay Loam, soft to 6 in., brown
HAS-4	59+00 25' Rt. Line "A" 832	831	0 - 2" 2" - 2' Topsoil Clay Loam, soft to 8 in., brown
HAS-5	60+00 25' Rt. Line "A" 832	831	0 - 2" 2" - 2' Topsoil Clay Loam, soft to 8 in., brown to dark brown
HAS-6	60+95 25' Rt. Line "A" 832	832	0 - 2' Clay Loam, soft to 8 in., dark brown

Note: Cohesive soils described as soft based on ease with which to push a ½-in. diameter steel rod.

DIVISION A - CYNTHEANNE ROAD
OVER FRANK KEISER DRAIN
PERMITS

Construction/Stormwater Pollution Prevention Plan Technical Review and Comment (*Form 1*)

Project Information	Project Name: SS-23034: Small Structure Replacement Project		County: Hamilton		
	Plan Submittal Date:		Hydrologic Unit Code: 5120111200030		
	Project Location Description: Approximately .42 miles north of Cyntheanne Rd & 146th St. intersection.				
	Latitude and Longitude: N 40° 00' 33" W 85° 52' 52"				
	Civil Township: Wayne	Quarter:	Section: 17,18	Township: 18N	Range: 6E
	Project Owner Name: Hamilton County Board of Commissioners				
	Contact: Faraz Khan				
	Address: 1700 South 10th Street				
	City: Noblesville		State: IN		Zip: 46060
	Phone: (317)773-7770	FAX: (317)776-9814	E-Mail: faraz.khan@hamiltoncounty.in.gov		
Plan Review	Plan Preparer Name: David Duncan				
	Affiliation: Engineering Consultant				
	Address: 6200 Vogel Rd				
	City: Evansville		State: IN		Zip: 47715
	Phone: (812)479-6200	FAX: (812)479-6262	E-Mail: dduncan@lochgroup.com		
	Review Date: 11/28/16				
	Principal Plan Reviewer: Ginger Davis				
	Agency: Hamilton County Soil and Water Conservation District				
	Address: 1717 Pleasant St. Suite 100				
	City: Noblesville		State: IN		Zip: 46060
Phone: (317)773-2181		FAX:	E-Mail: Ginger.Davis@hamiltoncounty.in.gov		
Assisted By:					
<input checked="" type="checkbox"/> PLAN IS ADEQUATE: A comprehensive plan review has been completed and it has been determined that the plan satisfies the minimum requirements and intent of 327 IAC 15-5. <input type="checkbox"/> Please refer to additional information included on the following page(s). <input checked="" type="checkbox"/> Submit Notice of Intent (NOI): Attach a copy of this cover page when submitting the NOI to the Indiana Department of Environmental Management. Construction activities may begin 48 hours following the submittal of the NOI. A copy of the NOI must also be sent to the Reviewing Authority (e.g. SWCD, DNR).					
<input type="checkbox"/> A preliminary plan review has been completed; a comprehensive review will not be completed within the 28-day review period. The reviewing authority reserves the right to perform a comprehensive review at a later date and revisions to the plan may be required at that time to address deficiencies. <input type="checkbox"/> Please refer to additional information included on the following page(s). <input type="checkbox"/> Submit Notice of Intent (NOI): Attach a copy of this cover page when submitting the NOI to the Indiana Department of Environmental Management. Construction activities may begin 48 hours following the submittal of the NOI. A copy of the NOI must also be sent to the Reviewing Authority (e.g. SWCD, DNR).					
<input type="checkbox"/> PLAN IS DEFICIENT: Significant deficiencies were identified during the plan review. <input type="checkbox"/> Please refer to additional information included on the following page(s). <input type="checkbox"/> DO NOT file a Notice of Intent for this project. <input type="checkbox"/> DO NOT commence land disturbing activities until all deficiencies are adequately addressed, the plan re-submitted, and notification has been received that the minimum requirements have been satisfied.					
<input type="checkbox"/> Plan Revisions <input type="checkbox"/> Deficient Items should be mailed or delivered to the Principal Plan Reviewer identified in the Plan Review Section above.					

Construction/Stormwater Pollution Prevention Plan - Technical Review and Comment (Form 1)

Project Name: SS-23034: Small Structure Replacement Project

Date Reviewed: 11/28/16

The technical review and comments are intended to evaluate the completeness of the Construction/Stormwater Pollution Prevention Plan for the project. The Plan submitted was not reviewed for the adequacy of the engineering design. All measures included in the plan, as well as those recommended in the comments should be evaluated as to their feasibility by a qualified individual with structural measures designed by a qualified engineer. The Plan has not been reviewed for other local, state, or federal permits that may be required to proceed with this project. Additional information, including design calculations may be requested to further evaluate the Plan.

All proposed stormwater pollution prevention measures and those referenced in this review must meet the design criteria and standards set forth in the "Indiana Stormwater Quality Manual" from the Indiana Department of Natural Resources, Division of Soil Conservation or similar Guidance Documents.

Please direct questions and/or comments regarding this plan review to:

Ginger Davis

Please refer to the address and contact information identified in the Plan Review Section on page 1.

Assessment of Construction Plan Elements (Section A)

The Construction Plan Elements are adequately represented to complete a plan review:

☒ Yes ☐ No

The items checked below are deficient and require submittal to meet the requirements of the rule.

A		A	
<input type="checkbox"/>	1 Index showing locations of required Plan Elements	<input type="checkbox"/>	2 11 by 17 inch plat showing building lot numbers/boundaries and road layout/names
<input type="checkbox"/>	3 Narrative describing the nature and purpose of the project	<input type="checkbox"/>	4 Vicinity map showing project location
<input type="checkbox"/>	5 Legal Description of the Project Site (Include Latitude and Longitude - NOI Requirement)	<input type="checkbox"/>	6 Location of all lots and proposed site improvements (roads, utilities, structures, etc.)
<input type="checkbox"/>	7 Hydrologic unit code (14 Digit)	<input type="checkbox"/>	8 Notation of any State or Federal water quality permits
<input type="checkbox"/>	9 Specific points where stormwater discharge will leave the site	<input type="checkbox"/>	10 Location and name of all wetlands, lakes and water courses on and adjacent to the site
<input type="checkbox"/>	11 Identification of all receiving waters	<input type="checkbox"/>	12 Identification of potential discharges to ground water (abandoned wells, sinkholes, etc.)
<input type="checkbox"/>	13 100 year floodplains, floodways, and floodway fringes	<input type="checkbox"/>	14 Pre-construction and post construction estimate of Peak Discharge (10 Year storm event)
<input type="checkbox"/>	15 Adjacent landuse, including upstream watershed	<input type="checkbox"/>	16 Locations and approximate boundaries of all disturbed areas (Construction Limits)
<input type="checkbox"/>	17 Identification of existing vegetative cover	<input type="checkbox"/>	18 Soils map including soil descriptions and limitations
<input type="checkbox"/>	19 Locations, size and dimensions of proposed stormwater systems (e.g. pipes, swales and channels)	<input type="checkbox"/>	20 Plans for any off-site construction activities associated with this project (sewer/water tie-ins)
<input type="checkbox"/>	21 Locations of proposed soil stockpiles and/or borrow/disposal areas	<input type="checkbox"/>	22 Existing site topography at an interval appropriate to indicate drainage patterns
<input type="checkbox"/>	23 Proposed final topography at an interval appropriate to indicate drainage patterns		

Construction/Stormwater Pollution Prevention Plan - Technical Review and Comment (Form 1)

Project Name: SS-23034: Small Structure Replacement Project
Date Reviewed: 11/28/16

Assessment of Stormwater Pollution Prevention Plan (Sections B & C)

Stormwater Pollution Prevention Plan - Construction Component (Section B)

Adequate	Deficient	Not Applicable		
			B	<i>The construction component of the Stormwater Pollution Prevention Plan includes stormwater quality measures to address erosion, sedimentation, and other pollutants associated with land disturbance and construction activities. Proper implementation of the plan and inspections of the construction site are necessary to minimize the discharge of pollutants. The Project Site Owner should be aware that unforeseen construction activities and weather conditions may affect the performance of a practice or the effectiveness of the plan. The plan must be a flexible document, with provisions to modify or substitute practices as necessary.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	Description of potential pollutant sources associated with construction activities
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	Sequence describing stormwater quality measure implementation relative to land disturbing activities
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	Stable construction entrance locations and specifications (at all points of ingress and egress)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	Sediment control measures for sheet flow areas
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	Sediment control measures for concentrated flow areas
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6	Storm sewer inlet protection measure locations and specifications
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7	Runoff control measures (e.g. diversions, rock check dams, slope drains, etc.)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8	Storm water outlet protection specifications
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	9	Grade stabilization structure locations and specifications
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10	Location, dimensions, specifications, and construction details of each stormwater quality measure
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11	Temporary surface stabilization methods appropriate for each season (include sequencing)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12	Permanent surface stabilization specifications (include sequencing)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13	Material handling and spill prevention plan
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14	Monitoring and maintenance guidelines for each proposed stormwater quality measure
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15	Erosion & sediment control specifications for individual building lots

Stormwater Pollution Prevention Plan - Post Construction Component (Section C)

Adequate	Deficient	Not Applicable		
			C	<i>The post construction component of the Stormwater Pollution Prevention Plan includes the implementation of stormwater quality measures to address pollutants that will be associated with the final land use. Post construction stormwater quality measures should be functional upon completion of the project. Long term functionality of the measures are critical to their performance and should be monitored and maintained.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	Description of pollutants and their sources associated with the proposed land use
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	Sequence describing stormwater quality measure implementation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	Description of proposed post construction stormwater quality measures (Include a written description of how these measures will reduce discharge of expected pollutants)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4	Location, dimensions, specifications, and construction details of each stormwater quality measure
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5	Description of maintenance guidelines for post construction stormwater quality measures

Construction/Stormwater Pollution Prevention Plan - Technical Review and Comment

Project Name: SS-23034: Small Structure Replacement Project

Date Reviewed: 11/28/16

DIVISION B – WETLAND MITIGATION
SPECIAL PROVISIONS

PROJECT MANUAL



**MUD CREEK
WETLAND MITIGATION**

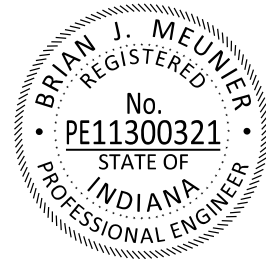
HAMILTON COUNTY, INDIANA

TECHNICAL SPECIFICATIONS

Prepared for:

**Hamilton County Highway Department
One Hamilton County Square
Noblesville, IN 46060**

**Issued for Bid
June 2017**



Brian J. Meunier 4/26/17

Prepared by:

**Christopher B. Burke Engineering, LLC
115 West Washington Street, Suite 1368 South
Indianapolis, IN 46204**

CBBEL Project No. 19.R160411.00000

MUD CREEK WETLAND MITIGATION PROJECT**TECHNICAL SPECIFICATIONS****TABLE OF CONTENTS**

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SECTION 01 80 00

PERMITS AND REGULATORY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Permits
- B. Compliance with permit conditions and requirements

1.2 PERMITS

- A. OWNER has obtained the following permits for this project:
 - 1. Indiana Department of Natural Resources (IDNR) Construction in a Floodway Permit
 - 2. Storm Water Pollution Prevention Plan (SWPPP) approval of the Construction Drawings by the Indianapolis Department of Code Enforcement
 - 3. IDEM Rule 5 Permit
 - 4. United States Army Corps of Engineers (USACE) Section 404 – Dredge and Fill Permit
 - 5. IDEM Section 401 Water Quality Certification
 - 6. City of Indianapolis Flora Permit
- B. CONTRACTOR is responsible for obtaining all other permits and/or licenses as required by law, ordinance, or regulation and paying any associated fees. Copies of any permits obtained by CONTRACTOR shall be provided to OWNER and ENGINEER.
- C. Copies of all permits obtained by OWNER will be provided to CONTRACTOR. Refer to Appendix B.
- D. CONTRACTOR is responsible for compliance with permit conditions and requirements.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

DIVISION 31 – EARTHWORK

SECTION 31 05 16

AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Coarse aggregate materials.
 - 2. Fine aggregate materials.
- B. Related Sections:
 - 1. Section 31 20 00 – Earthwork
 - 2. Section 31 35 00 – Geotextiles
 - 3. Section 31 37 00 – Riprap
 - 4. Section 33 41 13 – Storm Utility Drainage Piping
 - 5. Section 33 46 00 – Subdrainage

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - 3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - 4. ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Materials Source: Submit name and location of the material suppliers.
- C. Manufacturer's Certificate: CONTRACTOR shall provide documentation that the aggregate supplier is an Indiana Department of Transportation (INDOT) Certified Aggregate Producer.

1.4 QUALITY ASSURANCE

- A. Furnish each aggregate material from a single source throughout the Work.
- B. Aggregate material shall be in accordance with the Indiana Department of Transportation (INDOT) Standard Specifications.

PART 2 PRODUCTS

2.1 COARSE AGGREGATE MATERIALS

- A. Course aggregate shall be as specified on the Drawings in accordance with the Indiana Department of Transportation (INDOT) Standard Specifications.
- B. Coarse aggregate material shall be free of organic or other deleterious material.
- C. Aggregate material shall contain no ice, snow, or frozen material.

2.2 FINE AGGREGATE MATERIALS

- A. Fine aggregate shall be as indicated on the Drawings in accordance with the Indiana Department of Transportation (INDOT) Standard Specifications.
- B. Fine aggregate free of organic or other deleterious material.
- C. Aggregate material shall contain no ice, snow, or frozen material.

2.3 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing and inspection services.
- B. Coarse Aggregate Material - Testing and Analysis: Perform in accordance with ASTM D698.
- C. Fine Aggregate Material - Testing and Analysis: Perform in accordance with ASTM D698.
- D. When tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.1 PLACEMENT

- A. Place aggregate only when underlying excavations, foundations, and geotextile installations are completed and inspected by ENGINEER or CQA firm.
- B. Ensure that segregation of aggregate material is minimized during transportation and placement.
- C. Do not damage underlying geotextile fabric. Any geotextile fabric damaged during aggregate placement shall be replaced.
- D. Install aggregate to the thickness indicated on the Drawings.
- E. Compact as indicated on the Drawings.

3.2 STOCKPILING

- A. Stockpiling of materials on-site shall not be permitted; all stockpiles must be located off-site.

- B. The stockpile(s) shall be located in an area that will not interfere with construction activities or block drainage. The area shall be free of debris and other impediments.
- C. Stockpile in sufficient quantities to meet Project schedule and requirements.
- D. Install silt fence around the perimeter of all stockpiles. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.
- E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- F. Cover with a tarp to prevent contamination or as otherwise directed by OWNER or ENGINEER.

3.3 STOCKPILE CLEANUP

- A. Remove stockpile and leave area in clean and neat condition. Grade site surface to original condition and to prevent free standing surface water.
- B. Stabilize the area with permanent seeding and erosion control blanket, if warranted or indicated on the Drawings.

END OF SECTION

SECTION 31 10 00

SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removing surface debris.
 - 2. Removing designated trees, shrubs, and other plant life.
 - 3. Protecting existing trees, shrubs, groundcovers, plants, and grass to remain.
- B. Related Sections:
 - 1. Section 31 20 00 – Earthwork

1.2 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. CONTRACTOR shall provide photographs or videotape, sufficiently detailed, of the existing site and adjacent areas prior to site clearing.

1.3 QUALITY ASSURANCE

- A. Conform to applicable code for environmental requirements, disposal of debris, burning debris on site, and use of herbicides. CONTRACTOR shall attend a pre-construction meeting at the project site.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify existing plant life designated to remain is delineated, tagged, or otherwise identified.
- C. Identify waste area for placing removed materials. Waste area shall not restrict access to the site or adjacent sites, interfere with utilities, or block drainage. The location of the waste area shall be approved by OWNER or ENGINEER.

3.2 PREPARATION

- A. CONTRACTOR shall call the Indiana Underground Plant Protection Service (“Indiana 811”) by dialing 811 at least 48 hours prior to commencement of land-disturbing activities to schedule a utility locate. All underground utilities within the construction limits shall be located and marked. It is CONTRACTOR’s responsibility to verify the location of all existing utilities shown on the plans and to report any discrepancies or omissions to ENGINEER immediately.
- B. Install all temporary erosion control devices as indicated on the Drawings prior to commencement of land-disturbing activities. Inspect and maintain temporary erosion control measures in accordance with the Drawings and Specifications.
- C. CONTRACTOR shall conform to Permanent and Temporary Construction Easement Requirements indicated on Drawings.

3.3 PROTECTION

- A. Locate, identify, and protect from damage all utilities and other existing site features indicated to remain.
- B. Utilities must remain operational and accessible throughout the duration of the project unless otherwise coordinated with and approved by OWNER, ENGINEER, and utility company at least two days in advance of the proposed interruption.
- C. Protect trees, plant growth, and features designated to remain with temporary fencing prior to site clearing. Remove fencing when construction is complete.
 - 1. Storage of construction materials, debris, or excavated material shall not be permitted within fenced areas.
 - 2. Vehicles, equipment, and foot traffic shall not be permitted within fenced areas.
 - 3. Keep fenced areas free from weeds and trash.
- D. Protect survey benchmarks and control points from disturbance during construction. CONTRACTOR shall repair or replace in kind any trees, vegetation, structures, or other features to remain, if damaged.
- E. Do not cut any trees suitable for Indiana Bat roosting (greater than 3 inches diameter at breast height, living or dead, with loose hanging bark) from April 1 through September 30.

3.4 CLEARING AND GRUBBING

- A. Remove all brush, shrubs, tall grass, stumps, and other unwanted surface objects in the areas indicated on the Drawings.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 - 3. Use only hand methods for grubbing within tree protection zones.
 - 4. Remove tree branches and legally dispose of them off of OWNER’s property.

- B. Remove trees and shrubs in areas indicated on Drawings. Remove stumps, main root ball, and root system.
- C. Fill depressions caused by clearing and grubbing operations with approved soil material unless further excavation or earthwork is indicated.
 - 1. On embankments, over-excavate in all directions by benching one (1) foot vertically and one (1) foot horizontally into stiff, undisturbed soil. The surface area of the bench shall be scarified as warranted to ensure a good bond between the existing soil and subsequent backfill.
 - 2. Place fill material in horizontal layers not exceeding a loose depth of 6 inches, and compact each layer to a density equal to the adjacent original ground.
- D. During clearing and grubbing, CONTRACTOR shall ensure positive drainage is maintained on the exposed soils to prevent excess absorption of rainfall. Ruts, holes, and other depressed areas should be filled immediately to prevent ponding.

3.5 REMOVAL

- A. Remove loose rock and rubble from disturbance areas.
- B. Except for stripped topsoil or other materials indicated to remain on OWNER'S property, all cleared materials shall become CONTRACTOR's property and shall be removed from the site and disposed of in a safe manner in accordance with all local, state, and federal regulations.
- C. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on-site.
- D. Items noted or otherwise identified to be salvaged shall be returned to OWNER in their original condition.

END OF SECTION

SECTION 31 20 00

EARTHWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Site grading
2. Removal of topsoil and subsoil
3. Rock removal
4. Stockpiling
5. Off-site borrow
6. Trenching
7. Backfilling
8. Compacting

B. Related Sections

1. Section 31 05 16 – Aggregates for Earthwork
2. Section 31 23 19 – Dewatering
3. Section 31 35 00 – Geotextiles

1.2 REFERENCES

A. ASTM INTERNATIONAL

1. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
2. ASTM D698 – Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³)(600 kN-m/m³)
3. ASTM D2922 – Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
4. ASTM D3017 – Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

B. OSHA Safety and Health Standard (29 CFR 1910)

C. OSHA General Construction Standards (29 CFR 1926)

1.3 SUBMITTALS

A. Borrow Site Plan: Submit plan to ENGINEER at least ten (10) days prior to any surface disturbance. Borrow site plan shall include:

1. Map (United States Geological Survey topographic map preferred) showing the location, boundaries, dimensions, approximate quantities to be removed,

2. Name and address of the owner(s) of the proposed borrow area.
 3. Laboratory analysis of borrow material showing its conformity to the requirements stated herein. Samples shall be representative of all materials and all depths to be excavated.
 4. Reconnaissance report by a private, qualified archaeologist determining any significant cultural resources will be impacted.
- B. Compaction Testing: Submit compaction tests for embankment and spillway construction activities.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Topsoil: Pervious, friable loam free of hard lumps, debris, stone, large forms of vegetation, subsoil, and other deleterious material and shall be suitable for supporting vegetative growth.
1. Topsoil shall be taken from on-site sources within the construction limits.
 2. If additional topsoil is needed, CONTRACTOR shall amend available soil to produce a suitable growth medium or obtain topsoil from an offsite source. CONTRACTOR shall provide certificates or testing information for imported topsoil to confirm its suitability for each borrow site.
- B. Subsoil: Existing material not fitting the description of topsoil.
- C. Rock: Solid mineral material of size that cannot be removed by standard means with an excavator.

2.2 ACCESSORIES

- A. Geotextile Fabric: As specified in 31 35 00 - Geotextiles.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Call the Indiana Underground Plant Protection Service ("Indiana 811") by dialing 811 at least 48 hours prior to commencement of land-disturbing activities to schedule a utility locate. All underground utilities within the project limits shall be located and marked. Any discrepancies or omissions with the existing utilities shown on the Drawings shall be reported to the ENGINEER immediately.
- B. Identify required lines, levels, contours, and datum.
- C. Notify ENGINEER of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

- D. Maintain and protect existing utilities, structures, vegetation, survey benchmarks and other items to remain.
- E. Clear and grub as indicated on the Drawings and remove unsuitable material.
- F. CONTRACTOR shall deploy suitable equipment for the excavation, stockpiling, compaction, and grading of soil to construct the work and shall exercise caution to avoid pumping and general deterioration of shallow soils by heavy construction traffic. Excavation and grading shall be performed during dry conditions to the extent possible.

3.2 PROTECTION OF ADJACENT WORK

- A. Underpin adjacent structures which may be damaged by excavation work, including service utilities and pipe chases.
- B. Grade excavation top perimeter to prevent surface water run-off into excavation or to adjacent properties.

3.3 TOPSOIL EXCAVATING

- A. Clear and grub area and remove sod and grass before stripping topsoil.
- B. Strip topsoil to full depth in all areas to be excavated, filled, or re-graded or otherwise noted on the Drawings and in a manner to prevent mixing with subsoil or other waste materials.
- C. Do not excavate wet topsoil.
- D. Remove subsoil, trash, debris, weeds, roots, and other deleterious material from topsoil.
- E. Do not mix topsoil with other materials.
- F. Stockpile topsoil for reuse in accordance with this section.

3.4 SUBSOIL EXCAVATING

- A. Do not remove wet subsoil unless instructed by ENGINEER
- B. Remove groundwater in accordance with the approved water management plan.
- C. Provide dewatering as necessary to keep excavation free of standing water.
- D. Excavate within the project limits to the lines and grades shown on the Drawings.
- E. Over-excavate for placement of subgrade material or riprap and to remove unsuitable material.
- F. Slope banks in accordance with OSHA excavation regulations and as otherwise recommended by ENGINEER.
- G. Provide sheeting, shoring, bracing, or other protection as required to maintain a safe excavation and to adhere to all applicable safety requirements.

- H. Sheeting, shoring, and other protective measures shall be removed at the completion of excavation work.
- I. Grade top perimeter of temporary excavations to prevent surface water from draining into excavation.
- J. Remove lumped subsoil, rocks, and other unsuitable material encountered during the excavation.
- K. Notify ENGINEER immediately of any unexpected subsurface conditions.
- L. During/after compaction of fill, remove material which is soft, wet and/or pumping and replace with suitable backfill material and compact uniformly to 95 percent of the Standard Proctor maximum density (ASTM D-698).
- M. Correct unauthorized excavation at no cost to OWNER.
- N. Stockpile subsoil in area approved by ENGINEER and OWNER.
- O. Remove unsuitable material from the site and dispose of in accordance with all local, state, and federal regulations.
- P. Repair or replace items indicated to remain that are damaged by excavation.

3.5 ROCK REMOVAL

- A. Excavate and remove rock by mechanical method; drill holes and use expansive tools or wedges to fracture rock.
- B. Cut away rock at bottom of excavation to form level bearing.
- C. Remove excavated materials from the site.
- D. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of this section as directed by ENGINEER.

3.6 OFF-SITE BORROW

- A. Adhere to the following measures when off-site borrow material must be imported to the site.
 - 1. No borrow shall be taken from or borrow site operations occur in, wetland areas or Waters of the U.S.;
 - 2. No borrow site operation shall occur on a site listed in the National Register of Historic Places;
 - 3. No borrow shall be taken from, or borrow site operations affect, or be located within one-half mile of any Federally listed, established component of the National Wild and Scenic River System under 16 U.S.C. 1274 and 1276;
 - 4. Borrow site operations shall not be located within a critical habitat of a Federally listed endangered or threatened species of fish or wildlife under 16 U.S.C. 1531, et. seq.; and
 - 5. Borrow site operations shall be consistent with the approved IDEM State Implementation Plan governing ambient air quality.

6. If the disturbance area for the borrow site is greater than 1 acre, CONTRACTOR shall submit for a Rule 5 Permit. CONTRACTOR shall include a Stormwater Pollution Prevention Plan in accordance with the Rule 5 Permit.
- B. Stop work in borrow area and notify ENGINEER if archaeological artifacts are encountered during excavation operations. Operations in these areas may be restarted only after written permission from ENGINEER is obtained.
- C. Erosion of the borrow area shall be controlled during and after completion of the work. No sediment shall be allowed to leave the borrow area. CONTRACTOR is responsible for the design and permitting of appropriate erosion control measures within the borrow area.

3.7 STOCKPILING

- A. Stockpile materials at the location(s) indicated on the Drawings or as directed by OWNER or ENGINEER.
- B. The stockpile(s) shall be located in an area that will not interfere with construction activities or block drainage. The area shall be free of stumps, rock, and debris.
- C. CONTRACTOR shall store materials at an off-site location. The storage site shall be properly zoned for the intended use. CONTRACTOR shall be responsible for acquiring all permits and adherence to all applicable regulations.
- D. Stockpile in sufficient quantities to meet Project schedule and requirements.
- E. Separate differing materials with dividers or stockpile apart to prevent mixing.
- F. Stockpiles shall have a maximum height of eight (8) feet.
- G. Prevent intermixing of soil types or contamination.
- H. Install silt fence around stockpiles and temporarily seed or cover with a tarp if necessary to prevent contamination or erosion or if directed by OWNER or ENGINEER.
- I. Direct surface water away from stockpile site(s) to prevent erosion or deterioration of materials.

3.8 SITE GRADING

- A. Uniformly grade areas to create a smooth surface to the cross-sections, lines, and elevations indicated on the Drawings.
- B. Provide a smooth transition between existing adjacent grades and new grades.
- C. Fill settled areas that were excavated and backfilled and ruts or holes made by construction traffic. Compact to 95% of the Standard Proctor maximum dry density with a moisture content of minus 1% to plus 2% of the optimum moisture content.

3.9 PLACING TOPSOIL

- A. Place topsoil in areas where seeding is scheduled.
- B. Place topsoil only after underlying compacted soil construction is completed and accepted by OWNER and ENGINEER.
- C. Topsoil shall be placed in a single loose lift with a minimum depth of 6 inches. Place such that a distinct joint between the new and existing soil will not be created.
- D. Remove large stone, roots, grass, weeds, debris, and foreign material while spreading.
- E. Do not place topsoil in frozen or muddy conditions.
- F. Fine grade topsoil, eliminating rough or low areas.
- G. The final surface shall be graded smooth to final design grades. All significant surface variations, including vehicle tire or equipment ruts, shall be smoothed with a grader box or other method.
- H. Final grading performed by dozers shall be done in a manner such that the track cleats are oriented parallel to the contours to minimize runoff velocity down the slope and to help maintain moisture in the topsoil to promote vegetative growth.
- I. Lightly compact or roll placed topsoil.
- J. Leave stockpile area and site clean and raked, ready to receive seed.

3.10 EMERGENT WETLAND MICRO-GRADING

- A. Areas designated to receive emergent wetland seed mixes shall be micro-graded. Micro-grading shall consist of deforming the finish graded surface to produce a poorly-draining area by using a rubber-tired vehicle to create a random pattern of ruts.
- B. The final surface shall be deformed such that standing water will not exceed 6 inches in depth; ridges created during micro-grading shall not exceed a height of 6 inches above the proposed elevation shown on the drawings.

3.11 FIELD QUALITY CONTROL

- A. A minimum of one (1) field density test shall be taken for each lift to assure that adequate moisture conditioning and compaction is achieved.
- B. CONTRACTOR shall perform additional soil density testing on the compacted fill material as needed to confirm the density as required by ENGINEER.
- C. Perform laboratory material tests in accordance with ASTM D698.
- D. Perform in place compaction tests in accordance with ASTM D2922.

3.12 TOLERANCES

- A. Top Surface of Exposed Subgrade: 0 to +0.2 feet.
- B. Top of Topsoil: 0 to +0.2 feet.
- C. Embankment: +/-0.5 feet horizontal.

END OF SECTION

SECTION 31 23 19

DEWATERING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Groundwater control system.
 - 2. Surface water control system.
 - 3. Reservoir level control system.
 - 4. System operation and maintenance.
 - 5. Water disposal.
- B. Related Sections:
 - 1. Section 00 31 00 - Available Project Information: Geotechnical Engineering Reports.
 - 2. Section 31 20 00 - Earthwork
 - 3. Section 31 25 13 - Erosion Controls

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C33 - Standard Specification for Concrete Aggregates.

1.3 DEFINITIONS

- A. Groundwater control:
 - 1. Use of pumps and/or subsurface drains to establish a sufficiently lowered groundwater elevation as well as to collect groundwater seepage that would otherwise enter open excavations.
 - 2. Proper disposal of removed groundwater.
- B. Surface water control:
 - 1. Diversion of surface waters to prevent runoff from entering open excavations.
 - 2. Removal and proper disposal of surface water within open excavations.

1.4 PERFORMANCE REQUIREMENTS

- A. Provide groundwater and surface water control systems to permit Work to be completed on dry and stable subgrade.
 - 1. The CONTRACTOR shall provide sufficient dewatering equipment and make satisfactory arrangements for the disposal of water collected or removed during construction without undue interference with other work or damage to surrounding property.
 - 2. Furnish standby equipment stored at Project site and ready for immediate use in the event of failure of dewatering equipment.

- B. Design groundwater and surface water control systems to:
 - 1. Prevent surface water runoff from entering excavations.
 - 2. Collect and remove surface water entering excavations.
 - 3. Prevent damage to adjacent properties, buildings, structures, utilities, and facilities from construction operations.
 - 4. Prevent loss of fines, development of quick condition, or softening of foundation subgrade.
 - 5. Maintain stability of sides and bottoms of excavations.
 - 6. Control and prevent erosion and sedimentation.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Water Management Plan:

The CONTRACTOR shall submit a water management plan for groundwater and surface water control. The water management plan shall have the following components:

 - 1. Shop Drawings:
 - a. Number and location of all dewatering components and features.
 - b. Location(s) for the discharge of water and measures to be taken to prevent erosion and sedimentation.
 - 2. Design Data:
 - a. Indicate design values, analyses, and calculations to support design.
 - b. Methods for managing and monitoring groundwater and surface water.
 - c. Types of equipment to be utilized.
 - 3. Product Data: Submit data for each of the following:
 - a. Dewatering Pumps: Indicate manufacturer(s), sizes, capacities, priming method, and motor characteristics.
 - b. Pumping equipment for control of surface water within excavation.
 - c. All piping, valves, and accessory components to be used.
- C. Field Reports: Test and monitoring reports as specified in Field Quality Control article.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

1.7 QUALITY ASSURANCE

- A. Comply with all local, state, and federal regulations pertaining to water discharge and disposal from dewatering operations. Adhere to the approved water management plan.
- B. OWNER or ENGINEER has obtained a Rule 5 Permit from the Indiana Department of Environmental Management for storm water discharge from construction sites. CONTRACTOR is responsible for displaying this permit at the project site and complying with all requirements of the permit.

1.8 SEQUENCING AND COORDINATION

- A. Section 01 10 00 - Summary: Requirements for sequencing.

- B. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- C. Sequence work as appropriate to avoid unsafe conditions, damage to property, or project delays.

PART 2 PRODUCTS

2.1 DEWATERING EQUIPMENT

- A. Select suitable dewatering equipment to meet specified performance requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. The CONTRACTOR shall call the Indiana Plant Protection Service ("Indiana 811") at least 48 hours prior to commencement of land-disturbing activities to schedule a utility locate. All underground utilities shall be located and marked within the project limits. It is the CONTRACTOR'S responsibility to verify the location of all existing utilities and to report any discrepancies or omissions with the existing utilities shown on the plans to the ENGINEER immediately.
- C. The CONTRACTOR shall carefully review the Geotechnical Reports prior to commencing dewatering operations.

3.2 PREPARATION

- A. Protect existing adjacent buildings, structures, and improvements from damage caused by dewatering operations.
- B. Install silt fences and temporary rock check dams where called for by the Water Management Plan.

3.3 GROUNDWATER AND SURFACE WATER CONTROL SYSTEM

- A. Install groundwater and surface water control system in accordance with the reviewed Water Management Plan.
- B. Locate system components to allow continuous dewatering operations without interfering with installation of permanent Work and existing public rights-of-way, sidewalks, and adjacent buildings, structures, and improvements.
- C. Provide ditches, berms, and other devices to divert and drain surface water from excavation area.

- D. Remove all surface water and groundwater seepage within excavation in accordance with the reviewed Water Management Plan.

3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements
- B. After groundwater control system is installed, perform pumping test to determine when selected pumping rate lowers water level in well/sump below pump intake. Adjust pump speed, discharge volume, or both to ensure proper operation of each pump.
- C. Monitor the groundwater discharge for sand content and contamination. Notify the ENGINEER immediately of high sand content or potential contaminants. Monitor the discharge location(s) and areas immediately downstream for erosion and sedimentation and take corrective action if needed.

3.5 SYSTEM OPERATION AND MAINTENANCE

- A. CONTRACTOR shall bear all responsibility for safely operating groundwater and surface water control systems for the duration of the Work.
- B. Operate groundwater and surface water control systems continuously until earthmoving activities are complete.
- C. Conduct and record daily observations of dewatering systems. Make required repairs and perform scheduled maintenance.
- D. When groundwater and surface water control systems cannot control water within excavation, immediately notify the ENGINEER and stop excavation work.
 - 1. Supplement or modify dewatering systems and provide other remedial measures to control water within excavation.
 - 2. Demonstrate dewatering system operation complies with performance requirements before resuming excavation operations.
- E. Modify groundwater and/or surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.
- F. Correct unanticipated pressure conditions affecting dewatering system performance.
- G. Do not discontinue dewatering operations without the ENGINEER'S approval.

3.6 WATER DISPOSAL

- A. Discharge water as indicted on the approved Water Management Plan or as otherwise directed by the ENGINEER.

3.7 SYSTEM REMOVAL

- A. Remove dewatering systems after dewatering operations are discontinued.
- B. Repair damage caused by dewatering systems or resulting from failure of systems to protect property.

END OF SECTION

SECTION 31 25 13

EROSION CONTROLS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sediment Traps
 - 2. Silt Fence
 - 3. Erosion Control Blanket
 - 4. Stabilized Construction Entrance
 - 5. Temporary Rock Check Dam
 - 6. Concrete Washout
- B. Related Sections:
 - 1. Section 31 10 00 – Site Clearing
 - 2. Section 31 20 00 – Earthwork
 - 3. Section 31 35 00 – Geotextiles
 - 4. Section 31 37 00 – Riprap
 - 5. Section 32 92 19 – Seeding

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C127 - Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
 - 2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - 3. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 4. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- B. IDEM Indiana Stormwater Quality Manual (latest revision).
- C. Indiana Administrative Code 327 IAC 15-5.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer's product data for all erosion control products.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

PART 2 PRODUCTS

2.1 ROCK AND GEOTEXTILE MATERIALS

- A. Furnish riprap in accordance with the Indiana Department of Transportation Standard Specifications. Riprap gradation shall be as shown on the Drawings.
- B. Geotextile Fabric: As specified in 31 35 00 - Geotextiles

2.2 AGGREGATE AND SOIL MATERIALS

- A. Coarse Aggregate: Gradation shall be as shown on the Drawings and in accordance with Section 31 05 16 – Aggregates for Earthwork.
- B. Soil Backfill: As specified in Section 31 20 00 – Earthwork.

2.3 PLANTING MATERIALS

- A. Seeding and Soil Supplements: As specified on the Drawings.
- B. Mulch: As specified on the Drawings.

2.4 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Inspect all erosion control measures as indicated on the Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

3.2 SILT FENCE

- A. Place in locations noted on the Drawings.
- B. Install and maintain per instructions on the Drawings.

- C. Silt fence shall be a woven or non-woven geotextile fabric meeting the following minimum requirements:

Physical Property	Woven Geotextile Fabric	Non-Woven Geotextile Fabric
Filtering Efficiency	85%	85%
Textile Strength at 20% Elongation – Standard Strength	30 lbs. per linear inch	50 lbs. per linear inch
Textile Strength at 20% Elongation – Extra Strength	50 lbs. per linear inch	70 lbs. per linear inch
Slurry Flow Rate	0.3 gal/min/square feet	4.5 gal/min/square feet
Water Flow Rate	15 gal/min/square feet	220 gal/min/square feet
UV Resistance	70%	85%
Post Spacing	7 feet	5 feet

- D. Fence posts shall be 2" x 2" hardwood posts or steel posts with projections for fastening fabric.

3.3 EROSION CONTROL BLANKET

- A. Place in locations noted on the Drawings.
- B. Install and maintain per instructions on the Drawings and as recommended by manufacturer.
- C. Erosion control blanket shall be organic or synthetic mulch incorporated with a biodegradable, photodegradable, or permanent polypropylene or natural fiber netting. Utilize product specified on the Drawings or an approved equal.

3.4 STABILIZED CONSTRUCTION ENTRANCE

- A. Place in location(s) noted on the Drawings.
- B. Install and maintain per instructions on the Drawings.

3.5 TEMPORARY ROCK CHECK DAM

- A. Place in location(s) noted on the Drawings.
- B. Install and maintain per instructions on the Drawings.

3.6 CONCRETE WASHOUT

- A. Install and maintain per instructions on the Drawings.

3.7 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize, and activate temporary erosion controls before commencement of land-disturbing activities.
- C. Stabilize all disturbed areas of the project that are completed, as work proceeds, with temporary or permanent seeding, mulch, erosion control blankets, turf reinforcement mats, and/or riprap as described on the Drawings.
- D. Any disturbed areas that are unvegetated and are scheduled or likely to be left inactive for fifteen (15) days or more shall be temporarily or permanently stabilized with measures appropriate for the season as indicated on the Drawings.
- E. Stabilize channels, embankments, berms, and stockpiles immediately.
- F. Remove temporary erosion control measures only after approval of the established vegetation by OWNER and ENGINEER. Temporary erosion control measures shall remain in place at least until land-disturbing activities are complete and a uniform perennial vegetative cover with a density of 70% (by area) has been established.

3.8 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements Field inspecting.
- B. Inspect erosion control devices after each storm event and as indicated on the Drawings. Make necessary repairs to ensure erosion and sediment controls are in good working order.

3.9 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.
- B. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.
- C. Dispose of sediment or waste material appropriately in accordance with all local, state, and federal regulations. Sediment and waste material shall be removed by CONTRACTOR at no additional cost to OWNER.
- D. Do not damage erosion control devices during cleaning operations. Repair or replace damaged devices.
- E. Do not permit sediment to erode into construction or site areas or natural waterways.

END OF SECTION

SECTION 31 35 00

GEOTEXTILES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Woven geotextile.
 - 2. Nonwoven geotextile.
 - 3. Joints in geotextile fabric.
 - 4. Securing geotextiles.
- B. Related Sections:
 - 1. Section 31 05 16 – Aggregates for Earthwork
 - 2. Section 31 20 00 – Earthwork
 - 3. Section 31 25 13 – Erosion Controls
 - 4. Section 31 37 00 – Riprap
- C. Definitions: The following definitions apply to the work of this Section:
 - 1. **Fabric:** Geotextile, a permeable geosynthetic comprised solely of textiles.
 - 2. **Minimum Average Roll Value (MinARV):** Minimum of series of average roll values representative of geotextile provided.
 - 3. **Maximum Average Roll Value (MaxARV):** Maximum of series of average roll values representative of geotextile provided.
 - 4. **Nondestructive Sample:** Sample representative of finished geotextile, prepared for testing without destruction of geotextile.
 - 5. **Overlap:** Distance measured perpendicular from overlapping edge of one sheet to underlying edge of adjacent sheet.
 - 6. **Seam Efficiency:** Ratio of tensile strength across seam to strength of intact geotextile, when tested according to ASTM D 4884.
 - 7. **Woven Geotextile:** A geotextile fabric composed of polymeric yarn interlaced to form a planar structure with uniform weave pattern.
 - 8. **Nonwoven Geotextile:** A geotextile fabric composed of a pervious sheet of polymeric fibers interlaced to form a planar structure with uniform random fiber pattern.

1.2 REFERENCES

- A. The following standards are referenced in this Section:
 - 1. ASTM D 4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon-Arc Type Apparatus.
 - 2. ASTM D 4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - 3. ASTM D 4533 Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
 - 4. ASTM D 4595 Standard Test Method of Tensile Properties of Geotextiles by the Wide-Width Strip Method.

5. ASTM D 4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile.
6. ASTM D 4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
7. ASTM D 4884 Standard Test Method for Strength of Sewn or Thermally bonded Seams of Sewn Geotextiles.
8. ASTM D 4886 Standard Test Method for Abrasion Resistance of Geotextiles (Sand Paper/Sliding Block Method).

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit product data for all materials specified in this section.
- C. Samples:
 1. Geotextile: One-piece, minimum 18-inches long, taken across full width of roll of each type and weight of geotextile. Label each with brand name and furnish documentation of lot and roll number from which each sample was obtained.
 2. Field Sewn Seam: 5-foot length of seam, 12-inches wide with seam along center for each type and weight of geotextile.
 3. Securing Pin and Washer: 1 each.
- D. Shop Drawings:
 1. Installation drawings showing geotextile sheet layout, location of seams, direction of overlap, and sewn seams.
 2. Description of proposed method of geotextile deployment, sewing equipment, sewing methods, and provisions for holding geotextile temporarily in place until permanently secured.
- E. Manufacturer's Certificate: Provide manufacturer's certificate stating that the submitted product meets or exceeds the requirements of this section.

PART 2 PRODUCTS

2.1 WOVEN GEOTEXTILE

- A. Woven geotextile shall be composed of polymeric yarn interlaced to form a planar structure with uniform weave pattern. Products shall be calendared or finished so that yarns will retain their relative position with respect to each other.
- B. Polymeric yarn shall be long-chain synthetic polymers (polyester or polypropylene) with stabilizers or inhibitors added to make filaments resistant to deterioration due to heat and ultraviolet light exposure
- C. Sheet Edges: Selvaged or finished to prevent outer material from separating from sheet.
- D. Unseamed Sheet Width: Minimum 6 1/2 feet.

- E. Nominal Weight per Square Yard: 6.1 ounces.
- F. Physical Properties: Conform to requirements below:

Property	Test Method	Unit	Requirement	
			MD	CD
Wide Width Tensile Strength	ASTM D4595	kN/m (lbs/in)	35.0 (200)	24.5 (140)
Grab Tensile Strength	ASTM D4632	N (lbs)	1624 (365)	890 (200)
Grab Tensile Elongation	ASTM D4632	%	24	10
Trapezoid Tear Strength	ASTM D4533	N (lbs)	512 (115)	334 (75)
CBR Puncture Strength	ASTM D6241	N (lbs)	3004 (675)	
Apparent Opening Size	ASTM D4751	mm (U.S. Sieve)	0.43 (40)	
Percent Open Area	COE-02215	%	10	
Permittivity	ASTM D4491	sec ⁻¹	2.1	
Flow Rate	ASTM D4491	l/min/m ² (gal/min/ft ²)	5907 (145)	
UV Resistance (500 hours)	ASTM D4355	% strength retained	90	

2.2 NONWOVEN GEOTEXTILE

- A. Nonwoven geotextile shall be composed of a pervious sheet of polymeric fibers interlaced to form a planar structure with uniform random fiber pattern.
- B. Polymeric yarn shall be long-chain synthetic polymers (polyester, polypropylene, or polyethylene) with stabilizers or inhibitors added to make filaments resistant to deterioration due to heat and ultraviolet light exposure.
- C. Geotextile Edges: Selvaged or finished to prevent outer material from separating from sheet.
- D. Unseamed Sheet Width: Minimum 6 feet.
- E. Nominal Weight per Square Yard: 8 ounces.
- F. Physical Properties: Conform to requirements below:

Property	Test Method	Unit	Requirement
Grab Tensile Strength	ASTM D4632	N (lbs)	912 (205)
Grab Tensile Elongation	ASTM D4632	%	50
Trapezoid Tear Strength	ASTM D4533	N (lbs)	356 (80)
CBR Puncture Strength	ASTM D6241	N (lbs)	2225 (500)
Apparent Opening Size	ASTM D4751	mm (U.S. Sieve)	0.18 (80)
Permittivity	ASTM D4491	sec ⁻¹	1.1
Flow Rate	ASTM D4491	l/min/m ² (gal/min/ft ²)	3870 (95)
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70

2.3 SEWING THREAD

- A. Sewing thread shall be polypropylene, polyester, or Kevlar thread with durability equal to or greater than durability of geotextile sewn.

2.4 SECURING PINS

- A. Securing pins shall be steel rods or bars conforming to the following:
 - 1. 3/16-inch diameter.
 - 2. Pointed at one end; head on other end, sufficiently large to retain washer.
 - 3. Minimum Length: 12 inches.
- B. Steel washers for securing pins shall be:
 - 1. Outside Diameter: Not less than 1-1/2 inches.
 - 2. Inside Diameter: 1/4 inch.
 - 3. Thickness: 1/8 inch.
- C. Steel Wire Staples shall conform to the following:
 - 1. U-shaped.
 - 2. 10 gauge.
 - 3. Minimum 6 inches long.

PART 3 EXECUTION

3.1 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver each roll with sufficient information attached to identify manufacturer and product name or number.
- B. Handle products in manner that maintains undamaged condition.
- C. Do not store products directly on ground. Ship and store geotextile with suitable wrapping for protection against moisture and ultraviolet exposure. Store geotextile in a way that protects it from elements. If stored outdoors, elevate and protect geotextile with waterproof cover.

3.2 LAYING GEOTEXTILE

- A. Notify ENGINEER prior to placement whenever geotextiles are to be placed. Do not place geotextile prior to obtaining ENGINEER's approval of underlying materials.
- B. Lay and maintain geotextile smooth and free of tension, folds, wrinkles, or creases.

3.3 ORIENTATION ON SLOPES

- A. Orient geotextile with long dimension of each sheet parallel to direction of slope.
- B. Geotextile may be oriented with long dimension of sheet transverse to direction of slope only if sheet width, without unsewn seams, is sufficient to cover entire slope and anchor trench and extend at least 18 inches beyond toe of slope.

3.4 JOINTS

- A. Unseamed Joints:
 - 1. Unseamed joints shall be overlapped to the following dimensions unless otherwise indicated:
 - a. Foundation/Subgrade Stabilization: Minimum 18-inches.
 - b. Riprap: Minimum 18 inches.
 - c. Drain Trenches: Minimum 18 inches, except overlap shall equal trench width if trench width is less than 18 inches.
 - d. Other Applications: Minimum 12 inches.
- B. Sewn seams shall be used wherever stress transfer from one geotextile sheet to another is necessary. Sewn seams, as approved by ENGINEER, may also be used instead of overlap at joints for applications that do not require stress transfer.
 - 1. Seam efficiency shall be minimum 70 percent, verified by preparing and testing minimum of one set of nondestructive samples per acre of each type and weight of geotextile provided. Test according to ASTM D 4884.
 - 2. Type: "J" type seams are preferred, but flat or butterfly seams are acceptable.
 - 3. Stitch Count: Minimum 3 to maximum 7 stitches per inch.
 - 4. Stitch Type: Double-thread chainstitch, Type 401, Federal Standard No. 751a.
 - 5. Stitch Location: Two inches from geotextile sheet edges, or more if necessary to develop required seam strength.
 - 6. Sewing Machine: Capable of penetrating 4 layers of geotextile.

3.5 SECURING GEOTEXTILE

- A. Secure geotextile during installation as necessary with sand bags or other means approved by ENGINEER.
- B. Securing Pins:
 - 1. Insert securing pins with washers through geotextile, midway between edges of overlaps and 6 inches from free edges.
 - 2. Spacing: Maximum of 5' on a 3:1 slope.
 - 3. Install additional pins across each geotextile sheet as necessary to prevent slippage of geotextile or to prevent wind from blowing geotextile out of position.
 - 4. Push each securing pin through geotextile until washer bears against geotextile and secures it firmly to subgrade.

3.6 PLACING PRODUCTS OVER GEOTEXTILE

- A. Notify ENGINEER before placing material over geotextile. Do not cover installed geotextile prior to receiving authorization from ENGINEER to proceed.
- B. If tears, punctures, or other geotextile damage occurs during placement of overlying products, remove overlying products as necessary to expose damaged geotextile. Repair damage as indicated by this section.

3.7 INSTALLING GEOTEXTILES IN TRENCHES

- A. Place geotextile in a way that will completely envelope granular drain material to be placed in trench and with indicated overlap at joints. Overlap geotextile in direction of flow. Place geotextile in a way and with sufficient slack for geotextile to contact trench bottom and sides fully when trench is backfilled.
- B. After granular drain material is placed to grade, fold geotextile over top of granular drain material, unless otherwise indicated. Maintain overlap until overlying fill or backfill is placed.

3.8 RIPRAP APPLICATIONS

- A. Overlap geotextile at each joint with upstream sheet of geotextile overlapping downstream sheet.
- B. Sew joints where wave run-up may occur.

3.9 SILT FENCE APPLICATIONS

- A. Install geotextile in one piece or continuously sewn to make one piece, for full length and height of fence, including portion of geotextile buried in toe trench.
- B. Install bottom edge of sheet in toe trench and backfill in a way that securely anchors geotextile in trench.
- C. Securely fasten geotextile to a wire mesh backing and each support post in a way that will not result in tearing of geotextile when fence is subjected to service loads.
- D. Promptly repair or replace silt fence that becomes damaged.

3.10 REPAIRING GEOTEXTILE

- A. Repair or replace torn, punctured, flawed, deteriorated, or otherwise damaged geotextile. Repair damaged geotextile by placing patch of undamaged geotextile over damaged area plus at least 18 inches in all directions beyond damaged area. Remove interfering material as necessary to expose damaged geotextile for repair. Sew patches or secure them with pins and washers, as indicated above for securing geotextile, or by other means approved by ENGINEER.

3.11 REPLACING CONTAMINATED GEOTEXTILE

- A. Protect geotextile from contamination that would interfere, in the opinion of ENGINEER, with its intended function. Remove and replace contaminated geotextile with clean geotextile.

END OF SECTION

SECTION 31 37 00

RIPRAP

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Riprap placed loosely.
- B. Related Sections:
 - 1. Section 31 20 00 – Earthwork
 - 2. Section 31 35 00 – Geotextiles

1.2 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit product data for riprap (including source of material).
- C. Manufacturer's Certificate: CONTRACTOR shall provide documentation that the riprap supplier is an Indiana Department of Transportation (INDOT) Certified Aggregate Producer.

1.3 QUALITY ASSURANCE

- A. Furnish each riprap material from single source throughout the Work unless approved by ENGINEER.
- B. ENGINEER shall visually inspect riprap prior to placement.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Riprap shall be in accordance with the Indiana Department of Transportation Standard Specifications.
- B. The gradation of riprap shall be as specified on the Drawings.
- C. Geotextile Fabric: As specified in Section 31 35 00 - Geotextiles.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

3.2 PLACEMENT

- A. Areas on which geotextile fabric and riprap are to be placed shall be cleared of any brush, trees, stumps, debris, or other unsuitable material and graded to the lines and grades shown on the Drawings. Allow for thickness of the riprap. Compact any fill material and smooth the graded foundation.
- B. Install riprap to the lines and grades shown on the Drawings immediately after installing the geotextile fabric.
- C. Install riprap to at least the minimum depth as indicated on the Drawings. The installation depth shall be measured perpendicular to the existing grade. Finished grades shown on the Drawings are top of riprap elevations.
- D. Install using a method that will prevent segregation of stone sizes and damage to the geotextile fabric.
- E. Riprap shall be well-distributed and free from pockets of small stones and clusters of large stones. Fill holes or open spots as necessary.

3.3 SCHEDULES

- A. Place riprap according to the construction sequence provided in the Drawings or as directed by ENGINEER.

END OF SECTION

DIVISION 32 – EXTERIOR IMPROVEMENTS

SECTION 32 92 19

SEEDING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fertilizing.
 - 2. Seeding.
 - 3. Mulching.
 - 4. Maintenance.
- B. Related Sections:
 - 1. Section 31 20 00 – Earthwork
 - 2. Section 31 25 13 – Erosion Controls

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

1.3 DEFINITIONS

- A. Weeds: Vegetative species other than specified species to be established in given area.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data for seed mix, mulch, and other accessories.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Operation and Maintenance Data: Include maintenance instructions, cutting method, and maximum grass height. The types, application frequency, and recommended coverage of fertilizer should be included.

1.6 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.

1.7 QUALIFICATIONS

- A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum three (3) years documented experience.
- B. Installer: Company well qualified in performing work of this section with a minimum of three (3) years documented experience or approved by the manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.9 MAINTENANCE SERVICE

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance service.
- B. CONTRACTOR shall perform post-construction maintenance on the new vegetation for a period of two (2) years from substantial completion.

PART 2 PRODUCTS

2.1 SEED MIXTURE

- A. Seed Mixture: As specified on the Drawings or otherwise approved by OWNER and ENGINEER.

2.2 ACCESSORIES

- A. Lime: As recommended by soil testing.
- B. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- C. Erosion Control Blanket: As specified on the Drawings.
- D. Stakes: Softwood lumber, chisel pointed.
- E. String: Inorganic fiber.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify prepared soil base is ready to receive the Work of this section.
- C. Test soil to determine pH and nutrient levels as indicated on the Drawings.

3.2 SEEDING

- A. Perform in accordance with the Drawings.

3.3 SEED PROTECTION

- A. Identify seeded areas with stakes and string around area periphery. Set string height to 24 inches. Space stakes at 72 inches.
- B. Apply erosion control blanket in areas noted on the Drawings.

3.4 MAINTENANCE

- A. Water to prevent grass and soil from drying out.
- B. Control growth of weeds.
- C. Immediately reseed areas showing bare spots.
- D. Repair washouts or gullies.
- E. Protect seeded areas with warning signs during maintenance period.
- F. CONTRACTOR shall maintain final grades and vegetation until vegetation is established and accepted by OWNER. CONTRACTOR shall repair erosion damage to finished surfaces and vegetation at no cost to OWNER.
- G. Mow at a height of 4-6 inches when the oats set seed heads. Mow at a height of 4-6 inches once a month or whenever weed growth reaches 10 inches for the remainder of the first season. Keep mowing equipment at least 1 foot from trees.
- H. If cool season weed growth is heavy in the spring of the second season, mow once in late May.
- I. Leave temporary erosion control measures in place until after vegetation is established and approved by ENGINEER.

END OF SECTION

SECTION 32 93 00
FORESTED WETLANDS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Preparation of subsoil
 - 2. Seeding
 - 3. Maintenance
- B. Related Sections:
 - 1. Section 31 20 00 - Earthwork
 - 2. Section 32 92 19 - Seeding

1.2 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Plant Material Data: Submit plant material species, source, and duration and type of storage prior to arrival on-site.

1.3 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Operation and Maintenance Data: Include pruning objectives, types and methods; types, application frequency, and recommended coverage of fertilizer.

1.4 QUALIFICATIONS

- A. CONTRACTOR shall be, and have been, actively and directly engaged in prairie seed installation for a period of two (2) or more years. Provide proof of five (5) or more successful wetland seed and tree installations.
- B. CONTRACTOR must have access to and experiences with a no-till fluffy seed drill designed for prairie seed installations. Such drills are manufactured by Truax, Great Plains, and John Deer, Inc. Hydro-seeding may not be substituted for drill seeding.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. All native seed shall be stored in a cooler at 40 degrees Fahrenheit prior to installation. All native seed must be of wild ecotype.

B. No hybrids or cultivars may be included. Local genotype seed shall be used whenever possible due to its adaptation to local soil and climate. These specifications do not apply to the temporary matrix.

C. Plant material damaged as a result of delivery, storage or handling will be rejected.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Installations shall be performed between September 20 and December 20 or April 1 and June 1.

B. Under no circumstances shall this site be stabilized with winter rye, grain rye, or winter wheat. These plants produce toxins that inhibit native seed germination.

C. Site shall have a firm seedbed. If walking compacts soil over ½ inch, the site shall be culti-packed.

1.7 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.

B. Furnish one year manufacturer warranty for trees and shrubs.

PART 2 PRODUCTS

2.1 TREES & SHRUBS

A. Species and size identified in plant schedule, grown in climatic conditions similar to those in locality of the Work.

B. Furnish with reasonably straight trunks, well balanced tops, and single leader.

2.2 QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.

B. Test and analyze imported and existing topsoil.

C. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt and organic matter, and pH value.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify excavation is ready to receive work.

B. Verify that seedbed is sufficiently firm.

- C. Hand trim excavations, where necessary, so tree pits are consistent and in conformance with the Design Drawings.

3.2 PREPARATION OF SEED BED

- A. If vegetation exists on site, apply a glyphosate herbicide at least three days prior to installation on all actively growing vegetation. Do not herbicide in existing tree plantings. Never apply fertilizer to the site.
- B. Install seed when soil is sufficiently dry so that soil does not stick to the packer wheels on the drill.
- C. Ensure the drill is properly calibrated to sow the specified amount of seed over the specified area. Ensure complete coverage of the specified area.

3.3 TREE PLANTING

- A. Auger 24-inch diameter holes on a 12-foot center throughout planting.
- B. Alternate species throughout planting.
- C. Place plants for best appearance.
- D. Set plants vertical.
- E. Remove non-biodegradable root containers.
- F. Plant with soil level of the container tree level with the surrounding grade. Backfill around trees and firm the backfilled soil. Water trees thoroughly within 2 days of installation to settle soil. Set plants in pits or beds, partly filled with prepared plant mix, at minimum depth of 6 inches as indicated on Drawings under each plant. Remove loosen burlap, ropes, and wires, from top half of root ball.
- G. Place bare root plant materials so roots lie in natural position. Backfill soil mixture in 6 inch layers. Maintain plant life in vertical position.
- H. Saturate soil with water when pit or bed is half full of topsoil and again when full.

3.4 MAINTENANCE

- A. Mow at a height of 4-6 inches when the oats set seed heads. Mow at a height of 4-6 inches once a month or whenever weed growth reaches 10 inches for the remainder of the first season. Keep mowing equipment at least 1 foot from trees.
- B. If cool season weed growth is heavy in the spring of the second season, mow once in late May.

3.5 ACCEPTANCE

- A. For acceptance of the system at the beginning of the second full growing season, the following conditions shall be met:
 - 1. Coverage- 75% of each seeded community shall be covered with vegetation.
 - 2. Presence- 50% of the seeded species planted should be alive and present. 80% of the trees shall be alive and present.
 - 3. Abundance- 25% of the seeded vegetation should be native species of the permanent matrix.

3.6 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Plants will be rejected when ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

3.7 TOLERANCES

- A. Tree & Shrub Location & Spacing: ± 1.0 feet

END OF SECTION

APPENDIX A – GEOTECHNICAL ENGINEERING INVESTIGATIONS



GEOTECHNICAL ENGINEERING INVESTIGATION

PROPOSED MUD CREEK IMPROVEMENTS
CUMBERLAND ROAD OVER MUD CREEK
HAMILTON COUNTY, INDIANA

CARDNO ATC PROJECT NO. 170GC00055

APRIL 16, 2015

PREPARED FOR:

CHRISTOPHER B. BURKE ENGINEERING, LLC
115 WEST WASHINGTON STREET, SUITE 1368
INDIANAPOLIS, IN 46204

ATTENTION: MR. BRIAN J. MEUNIER, P.E.

April 16, 2015

Mr. Brian J. Meunier, P.E.
Christopher B. Burke Engineering, LLC
115 West Washington Street, Suite 1368
Indianapolis, IN 46204

Re: **Geotechnical Engineering Investigation**
Proposed Mud Creek Improvements
Cumberland Road over Mud Creek
Hamilton County, Indiana
Cardno ATC Project No. 170GC00055

Cardno ATC

7988 Centerpoint Dr.
Suite 100
Indianapolis, IN 46256

Phone +1 317 849 4990
Fax +1 317 849 4278
www.cardno.com

www.cardnoatc.com

Dear Mr. Meunier:

Submitted herewith is the report of our geotechnical engineering investigation for the referenced project. This study was authorized in accordance with your Subconsultant Services Agreement dated February 3, 2015 and our Proposal-Agreement No. PE-14-0538 Revised dated December 5, 2014.

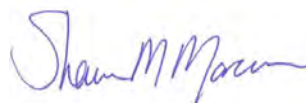
This report contains the results of our field and laboratory testing program, an engineering interpretation of this data with respect to the available project characteristics and recommendations to aid design and construction of the proposed improvements for this project. We wish to remind you that we will store the samples for 30 days after which time they will be discarded unless you request otherwise.

We appreciate the opportunity to be of service to you on this project. If we can be of any further assistance, or if you have any questions regarding this report, please do not hesitate to contact either of the undersigned.

Sincerely,



David McIlwaine, P.E.
Project Engineer
for Cardno ATC



Shawn M. Marcum, P.E.
Senior Project Engineer
for Cardno ATC

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Appendix

1 INTRODUCTION

This report presents the results of our geotechnical engineering investigation for the improvements to Mud Creek south of the intersection of Cumberland Road and 106th Street in Fishers, Hamilton County, Indiana. The general location of the project site is shown on the Vicinity Map (see Figure 1 in Appendix A).

This investigation was performed to characterize and evaluate the soil beneath the project site and to develop recommendations relative to support of the proposed improvements. The investigation consisted of an exploratory drilling and sampling program, laboratory testing of soil samples obtained from the test boring locations, engineering analyses and preparation of this report.

Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either express or implied. This company is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploration and laboratory test data presented in this report.

2 PROJECT DESCRIPTION

Christopher B. Burke Engineering, LLC (CBBEL) is developing plans for proposed improvements to Mud Creek in southeast Hamilton County, Indiana. It is our understanding that the improvements will consist of multiple phases. The first phase will be the construction of a high-flow shelf and a wetlands area and the second phase will consist of the replacement of the structure carrying Cumberland Road over Mud Creek and the replacement of the pedestrian bridge over Mud Creek west of Cumberland Road. Details regarding the proposed replacement structures were not available at the time of this study. The general layout of the project area is shown on the Boring Plan (Figure 2 in the Appendix).

3 PURPOSE AND SCOPE OF WORK

The purpose of this study was to determine the general subsurface conditions near the proposed culvert locations. This was accomplished by drilling five test borings (one test boring near proposed culvert replacement location, one test boring near the pedestrian bridge over Mud Creek and three within the proposed wetland area) and to evaluate this data with respect to the design and construction of the proposed structures. Geologic maps published by the Indiana Geological Survey (i.e., “Geologic Map of the 1° x 2° Indianapolis Quadrangle, Indiana and Illinois, Showing Bedrock and Unconsolidated Deposits” 1979 and “Bedrock Geologic Map of Indiana” 1987) were reviewed as part of this study to assess the general soil and bedrock conditions in the vicinity of the site. In addition, the site has been evaluated with respect to potential construction problems and recommendations are included that address matters of quality control during construction.

3.1 Field Investigation

The subsurface conditions for the proposed bridge replacement and wetlands project were investigated by drilling five test borings with ATV-mounted drilling equipment using hollow-stem-augers to advance the boreholes. Split-barrel samples were obtained in the soil overburden by using standard penetration test (SPT) procedures (American Association of State Highway and Transportation Officials-AASHTO-Method T206) at 2.5 and 5 ft intervals in the borings.

The test boring locations were staked in the field by Cardno ATC at locations designated by CBBEL. The borings were drilled at the approximate locations noted on the Boring Plan (Figure 2 in Appendix A). Ground surface elevations at the boring locations were estimated based on topographic mapping provided by CBBEL.

Logs of the borings, which show visual descriptions of all soil strata encountered using the AASHTO classification system, are included in Appendix B. Sampling information and other pertinent field data and observations are also included on the boring logs. In addition, a sheet defining the terms and symbols used on the logs and explaining the SPT procedure is provided immediately preceding the boring logs in Appendix B.

3.2 Laboratory Investigation

The disturbed soil samples were visually classified by an engineer in accordance with the AASHTO Soil Classification System and the visual classifications were verified or modified based upon the results of laboratory tests. Final boring logs were subsequently prepared and are included in Appendix B. Soil index property tests including natural moisture content tests, particle size analyses and Atterberg limits tests were performed on selected samples. In addition to classification tests, calibrated hand penetrometer tests (“pocket penetrometer” tests) were performed on selected samples. The results of all laboratory tests are included on the boring logs in Appendix B or on the graphs in Appendix C.

4 General Site Conditions

4.1 Regional and Site Geology

The project site is located within the Newcastle Tills and Drainageways, which is part of the Central Till Plain Region Physiographic Unit of the State of Indiana. The Newcastle Tills and Drainageways region consists of till plains of low relief crossed by many major tunnel valleys. The overburden soils consist mainly of Wisconsinan Age loam till of the Huron-Erie Lobe and granular alluvial deposits associated with the tunnel valleys. The mapped depth to bedrock is reported to be approximately 50 to 100 ft. The bedrock in this area is mapped as Silurian age limestone and dolomite of the Wabash Formation.

4.2 Subsurface Conditions

The general subsurface conditions at the site were investigated by drilling five test borings (two near the structure locations and three within the proposed constructed wetland area) to depths ranging from 10 to 40 ft below the existing ground surface. The subsurface conditions revealed by the field investigation are summarized in the following paragraphs. Detailed descriptions of the subsurface conditions encountered in each test boring are presented on the test boring logs in Appendix B. It should be noted that the stratification lines shown on the test boring logs represent approximate transitions between material types. In-situ stratum changes could occur gradually or at slightly different depths.

Below a topsoil layer that was approximately 8 to 11 in. thick, the test borings revealed very soft to stiff silty clay loam (A-7-6), silty loam (A-6) and/or silty clay (A-7-6) to depths ranging from 4.5 to 11.0 ft (approximately El 775 to El 770) below the existing ground surface. Very soft silty clay (A-7-6) with trace organic matter was noted in Boring B-2 between the depths of approximately 8 ft and 11 ft (approximately El 773 and El 770) below the existing ground surface. Below the cohesive soils, the test borings typically encountered loose to dense sand (A-1-a and A-1-b), sandy loam (A-2-4) and/or sandy gravel (A-1-a) to a depth of 15.5 ft in Borings B-1 and B-2 and to the boring termination depth of 10 ft in Borings B-3, B-4, and B-5. Below the granular soils in Borings B-1 and B-2, very stiff to hard loam (A-6) was encountered to a depth of approximately 37.0 ft (approximately El 743). Medium dense sand (A-1-b) was then encountered to the boring termination depth of 40 ft in Boring B-1 and Boring B-2 terminated in very stiff loam (A-6) at a depth of 40 ft.

No cobbles or boulders were noted in the test borings that were drilled for this project. However, our experience indicates that cobbles and boulders are often present within glacial soils such as those that underlie this site. Therefore, it is important to understand that cobbles and boulders will likely be encountered at various locations and depths at this site.

The consistencies of the cohesive soils and the densities of the granular soils as described above and on the boring logs were estimated based on the results of the standard penetration test (ASTM D-1586) and based on the definitions as described on the Field Classification System for Soil Exploration contained in Appendix B of this report.

4.3 Ground Water Conditions

Ground water observations were made during the drilling operations by noting the depth of water on the drilling tools and in the open boreholes following withdrawal of the drilling augers. Free ground water was noted on the drilling tools at depths varying from about 5.5 to 8.5 ft below the existing ground surface and at depths varying from 3.7 to 5.0 ft in the open boreholes after removal of the augers. Fluctuations in the ground water level should be expected due to variations in rainfall, the flow level in Mud Creek and other factors. The wet granular layers below the surficial cohesive soils may be under significant hydrostatic pressure depending on the depth of the cohesive soil and the phreatic ground water level.

5 DESIGN RECOMMENDATIONS

The following design recommendations have been developed on the basis of the previously described project characteristics (Section 2.0) and subsurface conditions (Section 4.0). If there is any change in these project criteria, including project location on the site, a review should be made by this office.

Based on geologic mapping and the results of the test borings, it is our opinion that the subsurface conditions within this project site meet the criteria for Site Class Definition D based on Table 3.10.3.1-1 (Site Class Definitions) in the 2012 AASHTO LRFD Bridge Design Specifications.

5.1 Culvert and Bridge Foundation Recommendations

The details for the proposed culverts and pedestrian bridge were not available at the time of this study. It was assumed that the proposed culvert structures and associated wing-walls and pedestrian bridge will be supported on the medium dense to dense sand encountered in the test borings below approximately El 775 (Boring B-1) to El 770 (Boring B-2). The following table summarizes the recommended design properties for the proposed structures bearing on the medium dense sand.

Footing Width, ft	Factored Bearing Resistance, lbs/sq.ft	Nominal Angle of Internal Friction of Bearing Soils, degrees	Nominal Friction Factor of Foundation Soils	Friction Angle Between Backfill Soils* and Wing-Wall, degrees	Nominal Cohesion of Bearing Soils, lbs/sq.ft	Nominal Adhesion of Bearing Soils, lbs/sq.ft
4	2,000	32	0.42	17	0	0
6	3,000					
8	4,000					

* - Assuming structure backfill

The soil at the bases of the spread footing excavations should be inspected as described in Section 6.1 to verify that the footings will bear on medium dense to dense granular soils. Removal and replacement of unsuitable soils may be required as needed based upon field inspections as recommended in Section 6.1 of this report. Since the spread footings will bear in granular soils below the ground water level it will be necessary to depress the ground water level in the vicinity of the

footing excavations as described in Section 6.4. The ground water level should be lowered to a depth of at least 3 ft below the base of the footing excavations, prior to beginning excavating for the footings.

Positive scour protection is essential to maintaining the integrity of materials that support the spread footings and the backfill materials. If riprap is used for scour protection, the natural subgrade soils should first be covered with a non-woven geotextile fabric.

5.2 Wetlands Construction

It is our understanding that a wetlands retention structure will be constructed south and east of the intersection of Cumberland Road and 106th Street. Specific details regarding the retention structure were not available at the time of this study. If the proposed retention structure is required to retain water at a nearly constant pool level, it will be necessary to place a clay liner, a bentonite liner system or a synthetic liner over the base and sides of the detention pond since some of the existing soils are too permeable to reliably retain water. If locally available clay is used, the liner should be at least 2 ft thick (minimum), have a hydraulic conductivity of 1×10^{-7} cm/sec, or less, and be compacted in 8 in. thick (maximum) lifts to at least 95 percent of the standard Proctor maximum dry density.

The soils encountered in the test borings that were drilled for the proposed retention structure below the depths of approximately 4 ft to 8 ft below the existing ground surface generally consist of sand with minor amounts of silt and varying amounts of gravel. The ground water level in the test borings was noted be generally about 4 to 7 ft below the existing ground surface, although it is expected that the ground water level will be higher at other times. The sand layers may be under significant hydrostatic pressure at the time of construction. Dewatering will likely be necessary prior to excavating for the retention structure.

Although beyond the scope of this study, it appears that the ground water is likely hydraulically connected to the flow in Mud Creek and may rise and fall with the flow level in Mud Creek. If a clay or bentonite liner system is used to maintain a constant pool level in the retention structure, it will be necessary to design the pond to resist “blow-out” of the liner system at times when a higher ground water level occurs.

5.3 Site Grading and Drainage

It is important that all earth fill that is placed adjacent to the existing embankments be carefully benched into the existing embankments in accordance with INDOT Standard Specifications Section 203.21 in order to preclude a weak zone from forming at the interface between the existing embankment soils and the new fill soil. All conventional earth embankment work should be performed in accordance with current INDOT Standard Specifications.

6 GENERAL CONSTRUCTION PROCEDURES AND RECOMMENDATIONS

Since this investigation identified actual subsurface conditions only at the test boring locations, it was necessary for our geotechnical engineers to extrapolate these conditions in order to characterize the entire project site. Even under the best of circumstances, the conditions encountered during construction can be expected to vary somewhat from the test boring results and may, in the extreme case, differ to the extent that modifications to the foundation recommendations become necessary. Therefore, we recommend that Cardno ATC be retained as geotechnical consultant through the earth-related phases of this project to correlate actual soil conditions with test boring data, identify variations, conduct additional tests that may be needed and recommend solutions to earth-related problems that may develop.

6.1 Foundation Excavations

The soil at the base of each footing excavation should be inspected by a geotechnical engineer to insure that all loose, soft or otherwise undesirable material is removed at footing locations and that the footing will bear on satisfactory material. At the time of such inspection, it will be necessary to make hand auger borings or use a hand penetration device in the base of the footing excavation to insure that the soils below the base are satisfactory for foundation support. The necessary depth of penetration will be established during inspection.

If pockets of soft, loose or otherwise unsuitable material (such as uncontrolled fill) are encountered in the footing excavations, the proposed footing elevations may be re-established by backfilling after the undesirable material has been removed. The undercut excavation beneath each footing should extend to suitable bearing soils and the dimensions of the excavation base should be determined by imaginary planes extending outward and down on a 2 (vertical) to 1 (horizontal) slope from the base perimeter of the footing. The entire excavation should then be refilled with a well-compacted structure backfill. Special care should be exercised to remove any sloughed, loose or soft materials near the base of the excavation slopes. In addition, special care should be taken to "tie-in" the compacted fill with the excavation slopes, with benches as necessary, to insure that no pockets of loose or soft materials will be left in place along the excavation slopes below the foundation bearing level.

Soils exposed in the bases of all satisfactory footing excavations should be protected against any detrimental change in condition such as from disturbance, rain and freezing. Surface run-off water should be drained away from the excavation and not allowed to pond. If possible, all footing concrete should be placed the same day the excavation is made. If this is not practical, the footing excavations should be adequately protected.

6.2 Fill Compaction

Engineered fill should be placed in lift thicknesses not to exceed about 8 in. and compacted to a minimum of 95 percent of the standard Proctor maximum dry density (AASHTO T99) as specified in the current INDOT Standard Specifications. It is likely that some drying of the fill material will be required before being placed in order to meet the INDOT Specification for fill placement. It is probable that this will also be the case for most of the soil materials encountered within the range of subgrade

treatment. However, adequate moisture conditioning may be difficult during wet seasons and, during such seasons, a granular material may be necessary to satisfy the minimum compaction requirements.

The fill should be placed in accordance with Section 203.09 of the INDOT Standard Specifications. Structure backfill material should be as defined in INDOT Standard Specifications Section 211.02.

Where fill material is placed on existing slopes, benches should be cut into the existing slopes so as to preclude a shear plane from developing at the interface. This is particularly important on this project since relatively thin sections of fill will be placed on the sides of the existing slopes and, in some cases, the fill may not extend down to the toe of the slope. Benches having a minimum width of 6 ft should be cut into the natural slopes and existing embankment side slopes that are 4 (horizontal) to 1 (vertical), or steeper, before new engineered fill is placed. These benches should be excavated in accordance with Section 203.21 of the INDOT Standard Specifications.

6.3 Erosion Protection

Highly erodible, granular material (such as structure backfill) should not be used in proposed ditches or within 12 in. of the required final grade of side slopes. The material used to encase the embankment should be non-erodible, cohesive material that is free from debris and other deleterious materials and suitable for sustaining vegetation. The final slopes should be seeded or sodded for erosion control. If seeded, the slope should be protected with an erosion control blanket to provide for adequate seed germination and rooting.

6.4 Construction Dewatering

Based upon the ground water data obtained during drilling operations, dewatering will be required for the footing excavations and the retention structure during construction. It will not be possible to pump water directly from the base of an excavation without causing deterioration of the footing bearing soils. Therefore, it will be necessary to depress the ground water level at least 3 ft below the bases of the excavations using well points. Excavations for the footings and retention structure should not begin until an acceptable dewatering system is in place and it can be confirmed that the ground water level is at an acceptable elevation. A specialty dewatering contractor should be retained to install and maintain the dewatering system.

Appendices

Appendix A

Figure 1: Vicinity Map

Figure 2: Boring Plan

Appendix B

“Field Classification System for Soil Exploration”

Test Boring Logs

Appendix C

Particle Size Distribution Reports

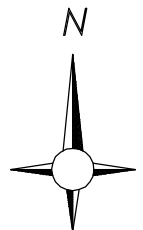
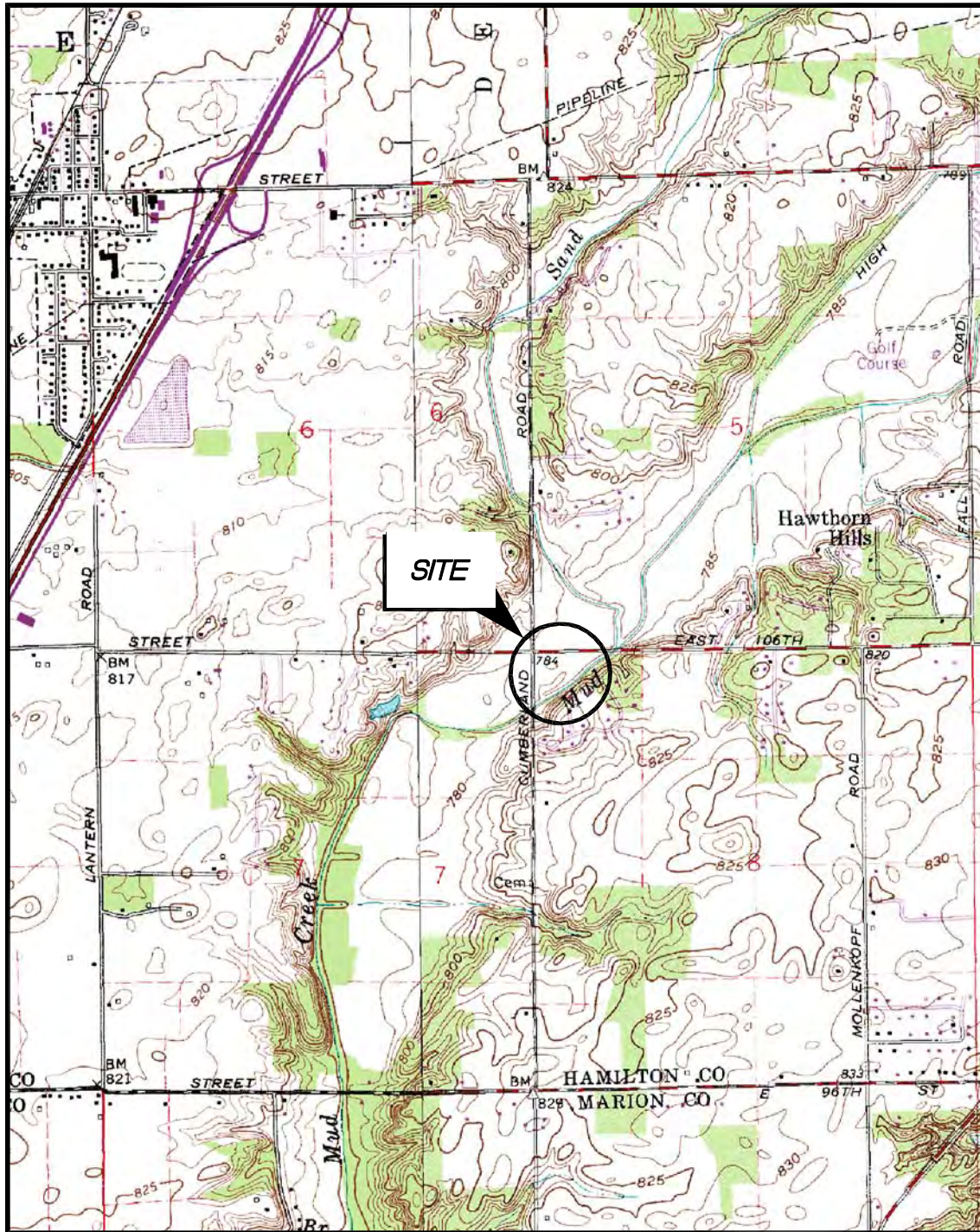
Appendix D

Bearing Resistance Calculations

Appendix A

Figure 1: Vicinity Map

Figure 2: Boring Plan



VICINITY MAP

PROPOSED MUD CREEK IMPROVEMENTS
CUMBERLAND ROAD OVER MUD CREEK
HAMILTON COUNTY, INDIANA.

Project Number:
170GC00055

Drawing File:
SEE LOWER LEFT

Date:
4/15

Scale:
1" = 2000'



Drn. By:
SP

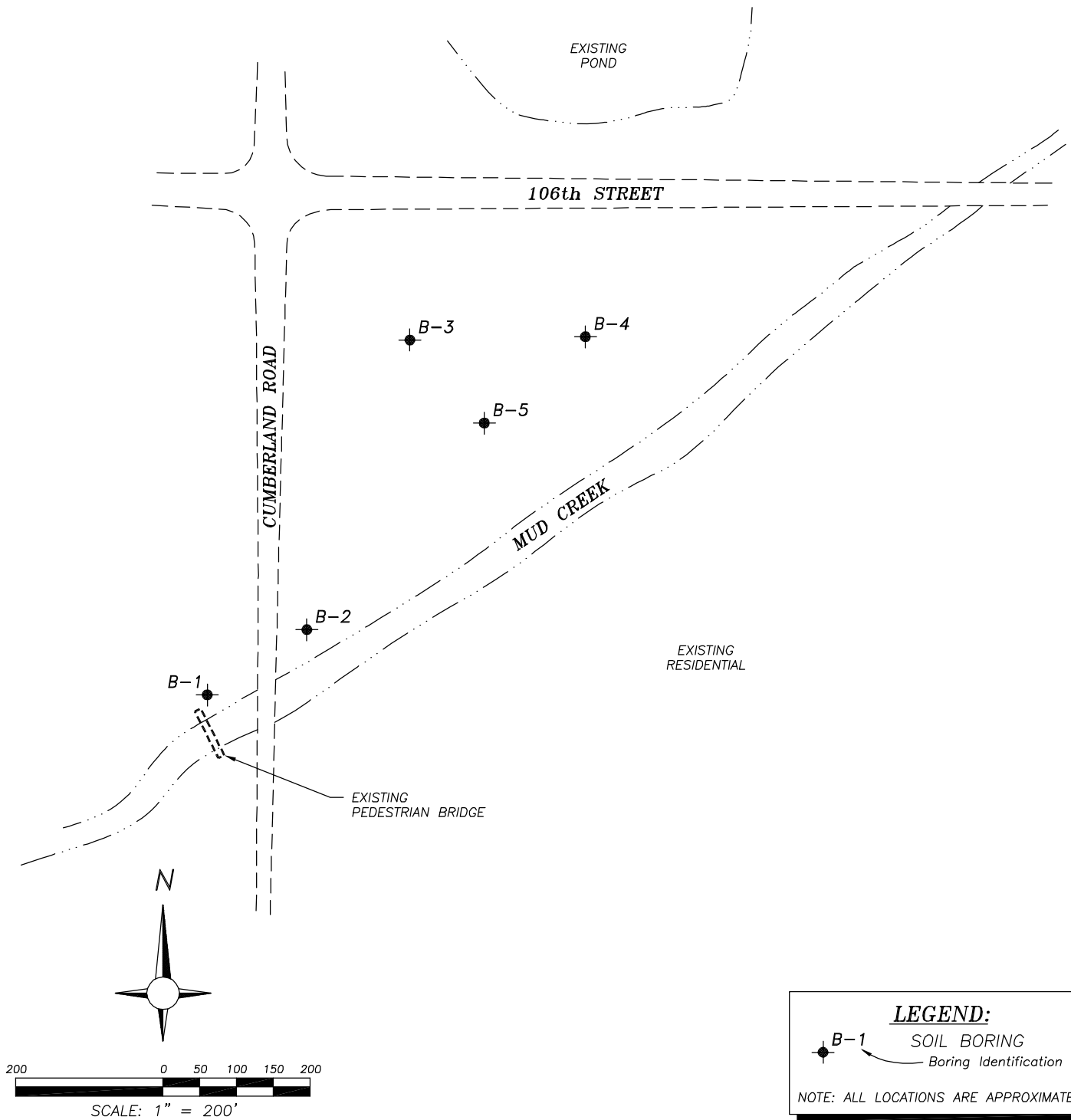
Ckd. By:
KS

App'd By:
TS

Figure:

1

H:\2015\CHRISTOPHER B. BURKE ENGINEERING LTD\MUD CREEK HIGH-FLOW SHELF AND CONSTRUCTED WETLAND\GEO (170GC00055)\GEOTECH.DWG, BPLAN



BORING PLAN

PROPOSED MUD CREEK IMPROVEMENTS
CUMBERLAND ROAD OVER MUD CREEK
HAMILTON COUNTY, INDIANA.

Project Number:
170GC00055

Drawing File:
SEE LOWER LEFT

Date:
4/15

Scale:
AS SHOWN



Dwn. By:
SP

Ckd. By:
KS

App'd By:
TS

Figure:

2

Appendix B

“Field Classification System for Soil Exploration”

Test Boring Logs

FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

Particle Size Identification

(Based on INDOT Standard Specifications Section 903)

Boulders	- 3 in. (75 mm) diameter or more
Gravel	- 2.0 mm (No. 10 Sieve) to 3 in.
Sand (Coarse)	- 0.425 mm to 2.0 mm (No. 40 Sieve to No. 10 Sieve)
Sand (Fine)	- 0.075 mm to 0.425 mm (No. 200 Sieve to No. No. 40 sieve)
Silt	- 0.002 mm to 0.075 mm (No. 200 Sieve)
Clay	- Smaller than 0.002 mm

NON-COHESIVE SOILS

(Silt, Sand, Gravel and Combinations)

Density

Very Loose	- 5 blows/ft or less
Loose	- 6 to 10 blows/ft
Medium Dense	- 11 to 30 blows/ft
Dense	- 31 to 50 blows/ft
Very Dense	- 51 blows/ft or more

COHESIVE SOILS

(Clay, Silt and Combinations)

Consistency

Very Soft	- 3 blows/ft or less
Soft	- 4 to 5 blows/ft
Medium Stiff	- 6 to 10 blows/ft
Stiff	- 11 to 15 blows/ft
Very Stiff	- 16 to 30 blows/ft
Hard	- 31 blows/ft or more

Plasticity

Degree of Plasticity	Plasticity Index
None to slight	0 - 4
Slight	5 - 7
Medium	8 - 22
High to Very High	over 22

Classifications shown on the test boring logs are made by visual inspection of samples and confirmed / modified based on index property tests.

Standard Penetration Test (AASHTO T 206) — Driving a 2.0" O.D., 1-3/8" I.D. sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary for ATC to drive the sampler 6 inches to seat the sampler into undisturbed soil, then perform the test. The number of hammer blows for seating the sampler and making the test are recorded for each 6 inches of penetration on the drill log (Example — 6-8-9). The standard penetration test result can be obtained by adding the last two figures (i.e., 8 + 9 = 17 blows/ft).

Strata Changes — In the column "Soil Classification" on the test boring logs, the horizontal lines represent strata changes. A solid line (_____) represents an actually observed change. A dashed line (_ _ _ _ _) represents an estimated change.

Ground Water observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc., may cause changes in the water levels indicated on the logs.

CLIENT **Christopher B. Burke Engineering, Ltd.**
PROJECT NAME **Proposed Mud Creek Improvements**
PROJECT LOCATION **Cumberland Road and 106th Street**
Hamilton County, Indiana

BORING # **B-1**
JOB # **170GC00055**
DRILLING and SAMPLING INFORMATION
TEST DATA

Date Started **2/11/15** Hammer Wt. **140** lbs.
Date Completed **2/11/15** Hammer Drop **30** in.
Drill Foreman **W. Bates** Spoon Sampler OD **2** in.
Inspector **K. Sweet** Rock Core Dia. **--** in.
Boring Method **HSA** Shelby Tube OD **--** in.

SOIL CLASSIFICATION		Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics	Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Moisture Content, %	Pocket Penetrometer PP-tsf	Remarks
SURFACE ELEVATION 780												
8 in. Topsoil		0.6										Ground surface elevation estimated from topographic map provided by client.
Brown, moist, stiff SILTY CLAY LOAM A-7-6		2.5		1	SS				6-6-5	16.8	1.75	
Grayish brown, moist, medium stiff SILTY CLAY LOAM A-7-6		4.5		2	SS				3-3-3	35.4	1.0	
Gray, moist, loose to medium dense SAND and GRAVEL A-1-b				3	SS				6-9-8			
				4	SS				6-8-6			
				5	SS				5-12-12			
				6	SS				8-10-11			
				7	SS				7-12-16	9.9	4.5+	
				8	SS				11-14-19		4.5+	
				9	SS				22-29-35	9.5	4.5+	
				10	SS				11-38-50/0.4'		4.5+	Borehole backfilled with auger cuttings and plugged with concrete at surface.
				11	SS				28-36-39	9.4	4.5+	
				12	SS				6-10-13	17.5	3.75	
Gray, wet, dense SAND A-1-b		37.0										Bottom of Test Boring at 40.0 ft
		40.0		13	SS				4-21-29			

Sample Type

SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater

● Noted on Drilling Tools **6.5** ft.
▽ At Completion **6.0** ft.
▼ After **--** hours **--** ft.
⊠ Cave Depth **21.0** ft.

Boring Method

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

CLIENT Christopher B. Burke Engineering, Ltd.
PROJECT NAME Proposed Mud Creek Improvements
PROJECT LOCATION Cumberland Road and 106th Street
Hamilton County, Indiana

BORING # **B-2**
JOB # **170GC00055**

DRILLING and SAMPLING INFORMATION

Date Started	<u>2/11/15</u>	Hammer Wt.	<u>140</u>	lbs.
Date Completed	<u>2/11/15</u>	Hammer Drop	<u>30</u>	in.
Drill Foreman	<u>W. Bates</u>	Spoon Sampler OD	<u>2</u>	in.
Inspector	<u>K. Sweet</u>	Rock Core Dia.	<u>--</u>	in.
Boring Method	<u>HSA</u>	Shelby Tube OD	<u>--</u>	in.

TEST DATA

Date Started	2/11/15	Hammer Wt.	140	lbs.	Sample Type	Sampler Graphics	Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Moisture Content, %	Pocket Penetrometer PP-tsf	Remarks	
Date Completed	2/11/15	Hammer Drop	30	in.									
Drill Foreman	W. Bates	Spoon Sampler OD	2	in.									
Inspector	K. Sweet	Rock Core Dia.	--	in.									
Boring Method	HSA	Shelby Tube OD	--	in.									
SOIL CLASSIFICATION					Stratum	Depth	Sample						
SURFACE ELEVATION 781					Depth, ft	Scale, ft	No.						
8 in. Topsoil					0.6								
Brown, moist, medium stiff SILTY LOAM A-6					2.5		1	SS		3-3-3	12.0	0.5	Ground surface elevation estimated from topographic map provided by client.
Brown, moist, medium stiff SILTY CLAY LOAM A-7-6						5	2	SS		3-3-4	27.4	1.5	
					7.0		3	SS		3-3-3	31.4	1.25	
Brown, moist, medium stiff SILTY LOAM A-6					8.0		4	SS		1-0-1	60.6	<0.25	
Gray, moist, very soft SILTY CLAY with trace organics A-7-6					11.0	10	5	SS		9-6-5			
Gray, wet, medium dense SAND A-1-b					12.5		6	SS		9-11-13			
Gray, wet, medium dense SANDY GRAVEL A-1-a					15.5	15	7	SS		7-8-13	9.8	4.0	
Gray, moist, very stiff to hard LOAM A-6						20	8	SS		8-13-17		4.5+	
							9	SS		13-14-18	10.1	4.5+	
						25	10	SS		6-10-14		4.5	
						30	11	SS		6-14-20		4.25	
						35	12	SS		4-7-9		2.5	
Gray, wet, medium dense SAND A-1-b					37.0								
Gray, very moist, very stiff LOAM A-6					39.5		13	SS		10-14-10		1.0	Bottom of Test Boring 40 ft
					40.0	40							

Sample Type

SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater

🔪 Noted on Drilling Tools	<u>8.5</u>	ft.
📏 At Completion	<u>5.0</u>	ft.
⏱ After -- hours	<u>--</u>	ft.
🏠 Cave Depth	20.5	ft.

Boring Method

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

CLIENT Christopher B. Burke Engineering, Ltd. BORING # B-3
PROJECT NAME Proposed Mud Creek Improvements JOB # 170GC00055
PROJECT LOCATION Cumberland Road and 106th Street
Hamilton County, Indiana

DRILLING and SAMPLING INFORMATION

TEST DATA

Date Started 2/11/15 Hammer Wt. 140 lbs.
Date Completed 2/11/15 Hammer Drop 30 in.
Drill Foreman W. Bates Spoon Sampler OD 2 in.
Inspector K. Sweet Rock Core Dia. -- in.
Boring Method HSA Shelby Tube OD -- in.

SOIL CLASSIFICATION		Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics	Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Moisture Content, %	Pocket Penetrometer PP-tsf	Remarks
SURFACE ELEVATION 780												
8 in. Topsoil		0.6										
Brown, moist, medium stiff SILTY CLAY A-7-6				1	SS				3-3-4	31.6	2.75	Ground surface elevation estimated from topographic map provided by client. Sample No. 2 Percent passing no. 200 sieve = 32.2%
Gray, moist, very loose SANDY LOAM A-2-4		4.0		2	SS				1-1-2			
Gray, wet, medium dense SAND and GRAVEL A-1-b		5.5	5	3	SS				7-9-9			
Gray, wet, medium dense SAND A-1-b		8.5		4	SS				5-5-7			
Bottom of Test Boring 10 ft		10.0	10									

Sample Type

SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater

● Noted on Drilling Tools 5.5 ft.
▽ At Completion 4.0 ft.
▽ After -- hours -- ft.
⊠ Cave Depth 5.5 ft.

Boring Method

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

CLIENT **Christopher B. Burke Engineering, Ltd.**
PROJECT NAME **Proposed Mud Creek Improvements**
PROJECT LOCATION **Cumberland Road and 106th Street**
Hamilton County, Indiana

BORING # **B-4**
JOB # **170GC00055**
DRILLING and SAMPLING INFORMATION
TEST DATA

Date Started **2/11/15** Hammer Wt. **140** lbs.
Date Completed **2/11/15** Hammer Drop **30** in.
Drill Foreman **W. Bates** Spoon Sampler OD **2** in.
Inspector **K. Sweet** Rock Core Dia. **--** in.
Boring Method **HSA** Shelby Tube OD **--** in.

SOIL CLASSIFICATION		Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics	Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Moisture Content, %	Pocket Penetrometer PP-tsf	Remarks
SURFACE ELEVATION 780												
10 in. Topsoil		0.8										
Dark brown, moist, stiff SILTY CLAY LOAM A-7-6		3.0		1	SS				4-5-6	26.3	2.5	Ground surface elevation estimated from topographic map provided by client.
Brown, moist, very soft SILTY CLAY LOAM A-7-6		5.5	5	2	SS				2-1-2	29.0	0.5	Sample No. 2 Percent passing no. 200 sieve = 73.5% Atterberg limits: LL=49, PL=13, PI=36
Brown, moist, medium stiff SILTY CLAY A-7-6		8.0		3	SS				2-3-4	32.4	0.5	
Gray, wet, loose SAND and GRAVEL A-1-b		10.0	10	4	SS				3-4-5			Sample No. 4 Percent passing no. 200 sieve = 10.2%
Bottom of Test Boring 10 ft												

Sample Type

SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater

● Noted on Drilling Tools **7.0** ft.
▽ At Completion **3.7** ft.
▼ After **--** hours **--** ft.
⊠ Cave Depth **6.0** ft.

Boring Method

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

CLIENT Christopher B. Burke Engineering, Ltd. BORING # B-5
PROJECT NAME Proposed Mud Creek Improvements JOB # 170GC00055
PROJECT LOCATION Cumberland Road and 106th Street
Hamilton County, Indiana

DRILLING and SAMPLING INFORMATION

TEST DATA

Date Started 2/11/15 Hammer Wt. 140 lbs.
Date Completed 2/11/15 Hammer Drop 30 in.
Drill Foreman W. Bates Spoon Sampler OD 2 in.
Inspector K. Sweet Rock Core Dia. -- in.
Boring Method HSA Shelby Tube OD -- in.

SOIL CLASSIFICATION		Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics	Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Moisture Content, %	Pocket Penetrometer PP-tsf	Remarks
SURFACE ELEVATION 780												
8 in. Topsoil	/	0.6										Ground surface elevation estimated from topographic map provided by client. Sample No. 3 Percent passing no. 200 sieve = 85.5% Atterberg limits: LL=48, PL=17, PI=31 1 inch diameter pvc pipe set in borehole after completion of sampling.
Brown, moist, medium stiff SILTY CLAY A-7-6	/	2.5		1	SS				3-4-5	29.2	3.0	
Gray, moist, soft SILTY CLAY A-7-6	/	5.5	5	2	SS				2-2-2	37.1	1.0	
Gray, moist, soft SILTY CLAY LOAM A-7-6	/	7.5		3	SS				3-3-2	48.6		
Gray, wet, medium dense SAND A-1-b	/	10.0	10	4	SS				8-11-12			
Bottom of Test Boring 10 ft												

Sample Type

SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater

● Noted on Drilling Tools 5.0 ft.
▽ At Completion 3.7 ft.
▼ After -- hours -- ft.
⊠ Cave Depth 8.0 ft.

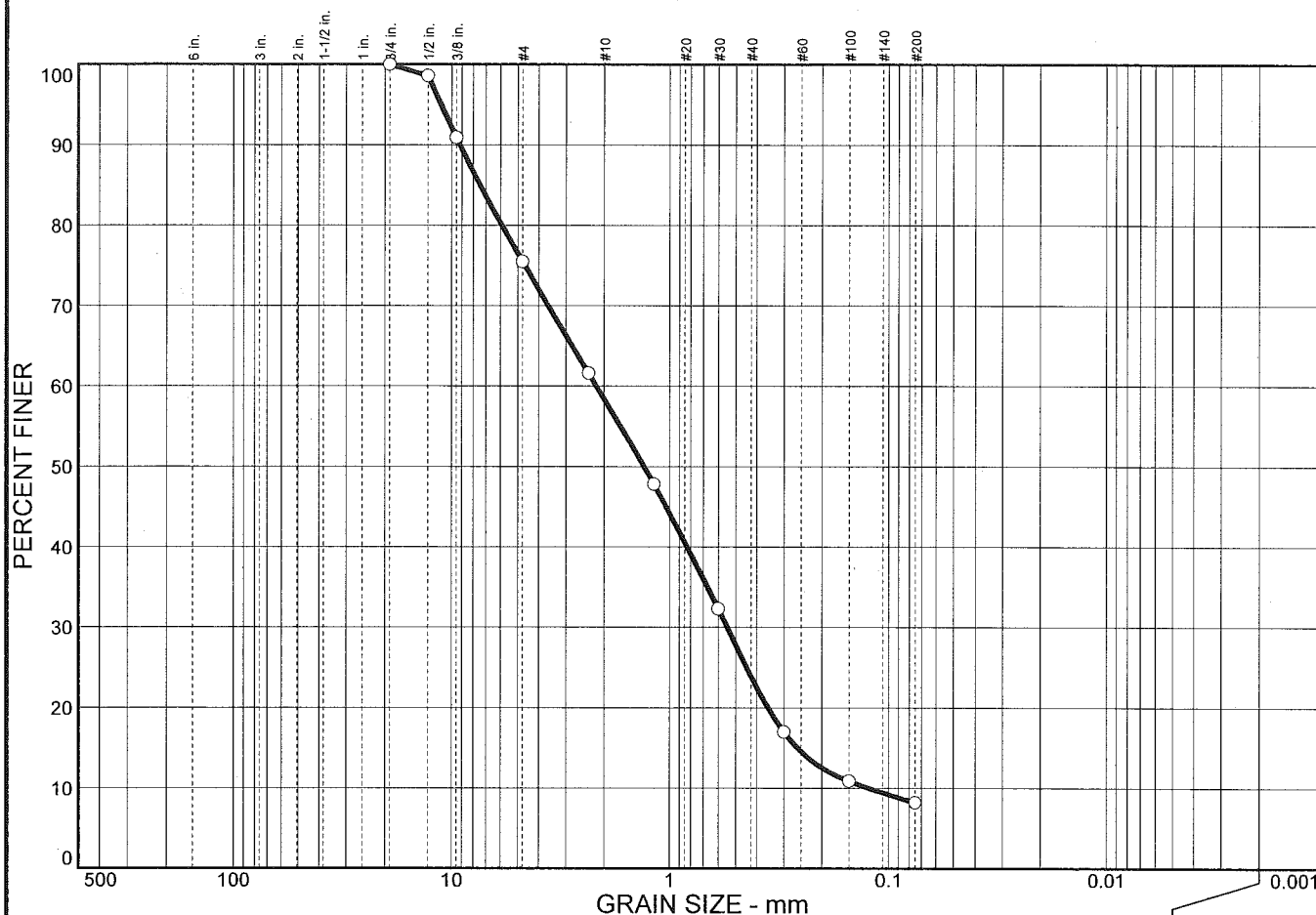
Boring Method

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

Appendix C

Particle Size Distribution Reports

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	41.6	50.2	8.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
1/2 in.	98.6		
3/8 in.	90.9		
#4	75.5		
#8	61.6		
#16	47.8		
#30	32.3		
#50	17.0		
#100	10.9		
#200	8.2		

* (no specification provided)

Soil Description
Sand and Gravel

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₈₅= 7.44 D₆₀= 2.17 D₅₀= 1.31
 D₃₀= 0.546 D₁₅= 0.260 D₁₀= 0.122
 C_u= 17.81 C_c= 1.13

Classification
 USCS= AASHTO= A-1-b

Remarks

Sample No.: B-1; S-5
Location:

Source of Sample: 6797

Date: 2/23/15
Elev./Depth: 11.0'-12.5'

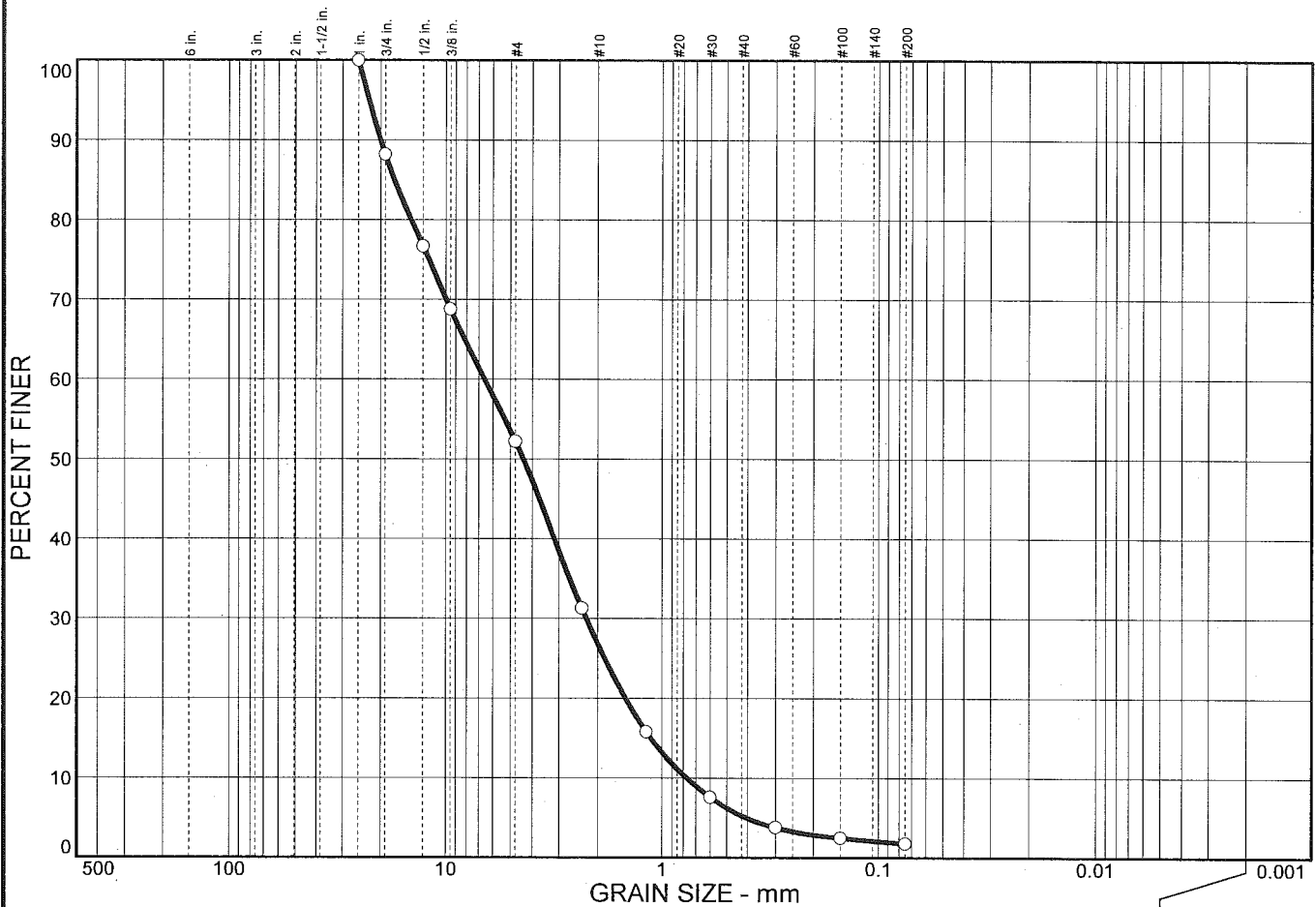
ATC ASSOCIATES, INC.

Client: CBBEL
Project: Mud Creek Improvements

Project No: 170GC00055

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Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	73.1	25.1	1.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 in.	100.0		
3/4 in.	88.2		
1/2 in.	76.7		
3/8 in.	68.8		
#4	52.2		
#8	31.3		
#16	15.8		
#30	7.6		
#50	3.8		
#100	2.5		
#200	1.8		

* (no specification provided)

Soil Description

Sandy Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 17.3 D₆₀= 6.57 D₅₀= 4.38
D₃₀= 2.25 D₁₅= 1.12 D₁₀= 0.772
C_u= 8.51 C_c= 1.00

Classification

USCS= AASHTO= A-1-a

Remarks

Sample No.: B-2; S-6
Location:

Source of Sample: 6797

Date: 2/23/15
Elev./Depth: 13.5'-15.0'

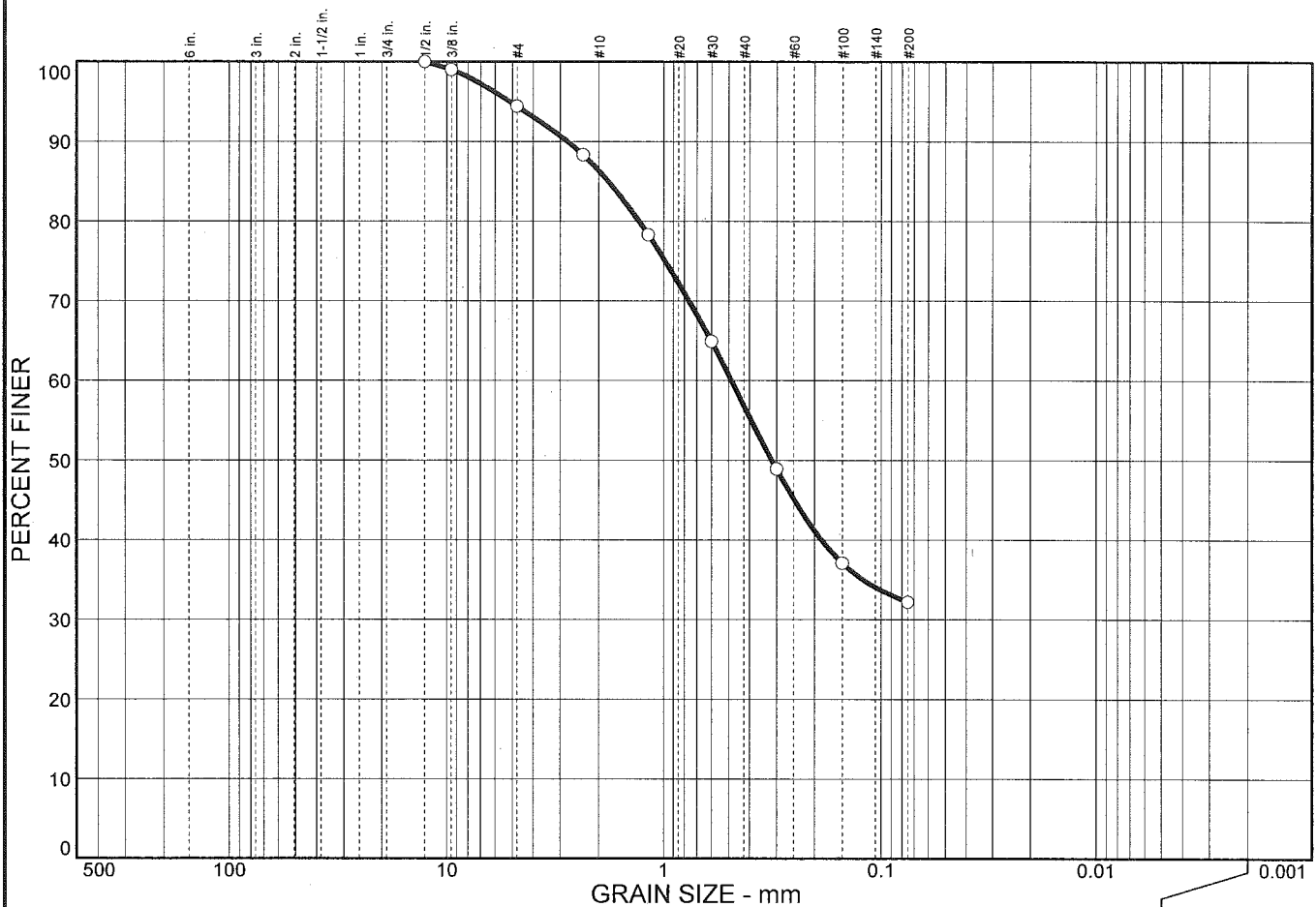
ATC ASSOCIATES, INC.

Client: CBBEL
Project: Mud Creek Improvements

Project No: 170GC00055

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Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	13.7	54.1	32.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	99.0		
#4	94.4		
#8	88.3		
#16	78.3		
#30	64.9		
#50	48.9		
#100	37.1		
#200	32.2		

* (no specification provided)

Soil Description

Sandy Loam

Atterberg Limits

PL= LL= PI=

Coefficients

D₈₅= 1.81 D₆₀= 0.485 D₅₀= 0.315
D₃₀= D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= AASHTO= A-2-4(0)

Remarks

Sample No.: B-3; S-2
Location:

Source of Sample: 6797

Date: 2/23/15
Elev./Depth: 3.5'-5.0'

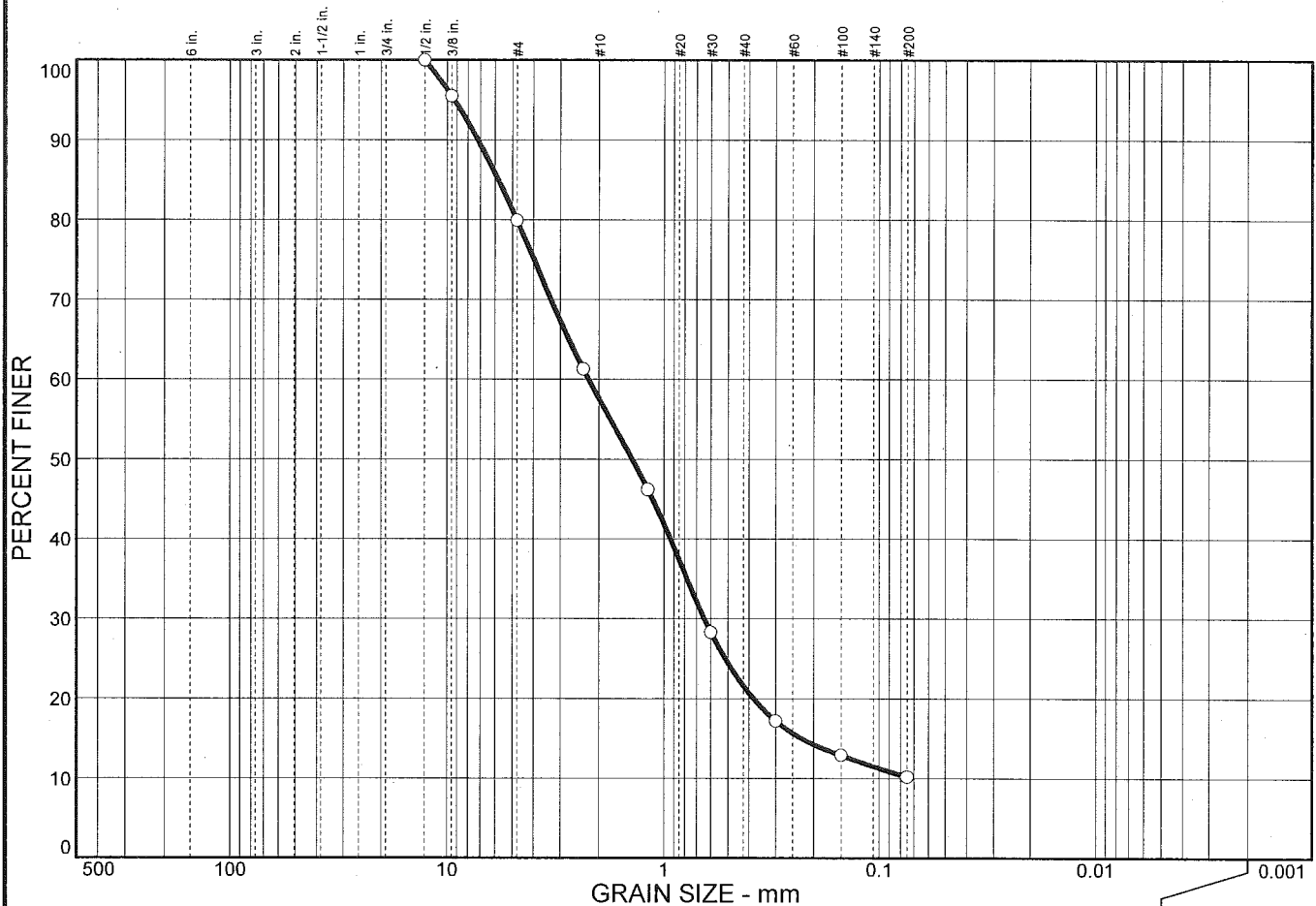
ATC ASSOCIATES, INC.

Client: CBBEL
Project: Mud Creek Improvements

Project No: 170GC00055

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Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	42.4	47.4	10.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2 in.	100.0		
3/8 in.	95.5		
#4	79.9		
#8	61.3		
#16	46.2		
#30	28.3		
#50	17.2		
#100	12.9		
#200	10.2		

* (no specification provided)

Soil Description
 Sand and Gravel

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₈₅= 5.80 D₆₀= 2.23 D₅₀= 1.39
 D₃₀= 0.644 D₁₅= 0.228 D₁₀=
 C_u= C_c=

Classification
 USCS= AASHTO= A-1-b

Remarks

Sample No.: B-4; S-4
Location:

Source of Sample: 6797

Date: 2/23/15
Elev./Depth: 8.5'-10.0'

ATC ASSOCIATES, INC.

Client: CBBEL
Project: Mud Creek Improvements

Project No: 170GC00055

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Appendix D

Bearing Resistance Calculations

PROPOSED MUD CREEK IMPROVEMENTS
 CUMBERLAND ROAD OVER MUD CREEK
 HAMILTON COUNTY, INDIANA

SHEET NO. 1 OF 1
 JOB NO. 1706C00055
 BY SM DATE 4-10-15
 CK DATE

ASSUME BEARING ON MEDIUM DENSE TO DENSE GRANULAR SOILS
 BELOW EL 774 (B-1) AND BELOW EL 770 (B-2)

ESTIMATED PROPERTIES:

$$c = 0$$

$$\phi = 33^\circ \quad N_g = 35.2 \quad \phi_b = 0.45$$

$$\gamma' = 63 \text{ pcf}$$

$$Q_N = \frac{1}{2} B \gamma' N_g$$

$$Q_N = 0.5(4 \text{ ft})(63 \text{ pcf})(35.2)$$

$$Q_N = 4,435 \text{ psf}$$

$$Q_F = \phi_b Q_N$$

$$Q_F = (0.45)(4,435 \text{ psf})$$

$$Q_F = 2,000 \text{ psf}$$

<u>FOOTING WIDTH, FT</u>	<u>NOMINAL CAPACITY, psf</u>	<u>FACTORED CAPACITY, psf</u>
4	4,435	2,000
6	6,653	3,000
8	8,870	4,000

APPENDIX B – WETLAND DELINEATION REPORT

CHRISTOPHER B. **BURKE** ENGINEERING, LLC



MUD CREEK

Wetland / “Waters” Delineation Report
Fishers, IN | May 2014



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EXHIBITS

Exhibit 1:	Site Location Map
Exhibit 2:	National Wetlands Inventory (NWI) Map
Exhibit 3:	Soils Map
Exhibit 4:	Topography Map
Exhibit 5:	Digital Flood Insurance Rate Map (DFIRM)
Exhibit 6:	Delineated Wetlands, Data Points, & Photo Stations

APPENDICES

Appendix A:	Photographs
Appendix B:	Data Sheets
Appendix C:	Permitting Summary and Jurisdictional Guidance

**JURISDICTIONAL WATERS AND WETLAND DELINEATION REPORT
MUD CREEK
HAMILTON COUNTY, INDIANA**

EXECUTIVE SUMMARY

Christopher B. Burke Engineering, LLC (CBBEL) staff conducted an onsite field investigation of a parcel of land bounded by 106th Street to the north, Cumberland Road to the west, and Mud Creek to the south, in Hamilton County, Indiana. Field work was conducted on May 14, 2014 and again on December 9, 2014 during which time one (1) wetland was identified (**Exhibit 6**). Wetland delineations were conducted using methods identified in the Regional Supplement to the Corps of Engineers Delineation Manual: Midwest Region (Version 2.0) (August 2010).

Table 1 is a summary of the "waters"/wetland sites identified, including acreage or linear footage and our opinion of federal regulatory jurisdiction.

Table 1: Summary of Waters/Wetlands in Project Area

Site	Wetland/Stream Type	Acreage/Liner Footage (within project limits)	Jurisdiction
Wetland 1	Palustrine Emergent (PEM)	0.03	State/Federal
Mud Creek	Perennial	1,180 LF	State/Federal

1.0 STUDY AREA

On May 14 and December 9, 2014 Christopher B. Burke Engineering, LLC (CBBEL) completed a "Waters of the U.S." ("Waters")/Wetland field investigation of the Mud Creek site in Hamilton County, Indiana (**Exhibit 1**). This report was prepared to document our findings and to determine if the on-site "waters"/wetland areas are jurisdictional under Sections 404/401 of the Clean Water Act (CWA) or under current Indiana Regulations. The project site includes the parcel of land bounded by 106th Street to the north, Cumberland Road to the west, and Mud Creek to the south, in Hamilton County, Indiana. Specifically, the project is located in Section 8 of Township 17 North, Range 5 East on the McCordsville 7.5 Minute Quadrangle.

The project site consists of a newly seeded open field that has been disturbed by clearing and seeding, bordered by a berm which runs along the north side of Mud Creek. "Waters"/wetland boundaries were delineated in accordance with the Midwest Region methodology established by the USACE. The jurisdictional waters and data points are shown on **Exhibit 6**. Information collected on site is listed in the attached data forms (**Appendix 2**).

2.0 METHODOLOGY

2.1 WETLAND DETERMINATION METHODOLOGY

Wetland determinations were conducted using the methodology from the *Regional Supplement to the Corps of Engineers Delineation Manual: Midwest Region (Version 2.0)*, dated August 2010. The Midwest Regional Supplement identifies the mandatory technical criteria for wetland identification. The three essential characteristics of a wetland are hydrophytic vegetation, hydric soils and wetland hydrology as described below:

Hydrophytic Vegetation: The hydrophytic vegetation criterion is based on a separation of plants into five basic groups:

- (1) Obligate wetland plants (OBL) almost always occur (estimated probability >99%) in wetlands under natural conditions;
- (2) Facultative wetland plants (FACW) usually occur in wetlands (estimated probability 67-99%), but occasionally are found in non-wetlands;
- (3) Facultative plants (FAC) are equally likely to occur in wetlands or nonwetlands (estimated probability 34-66%);

- (4) Facultative upland plants (FACU) usually occur in non-wetlands (estimated probability 67-99%), but occasionally are found in wetlands (estimated probability 1-33%); and
- (5) Obligate upland plants (UPL) almost always occur (estimated probability >99%) in non-wetlands under natural conditions.

Indicator 1 - Rapid Test for Hydrophytic Vegetation: The rapid test for hydrophytic vegetation is met if all dominant species across all strata are OBL or FACW, or a combination of the two, based on a visual assessment.

Indicator 2 - Dominance Test: If greater than 50% of the plants present are FAC, FACW, or OBL the subject area is considered to be wetland in terms of vegetation, and no further vegetation analysis is required.

Indicator 3 - Prevalence Index: This test is conducted if the plant community fails the Dominance Test, but indicators of hydric soil and wetland hydrology are both present. The Prevalence Index is a weighted-average (based on percent cover) wetland indicator status of all plant species in the sampling plot, where each indicator status category is given a numeric value (OBL=1, FACW=2, FAC=3, FACU=4, and UPL=5). If the Prevalence Index is less than or equal to 3.0, then the hydrophytic vegetation criteria has been met.

Indicator 4 - Morphological Adaptations: This test is conducted if the plant community fails the prevalence test, but indicators of morphological adaptations for life in wetlands, on otherwise upland plant species, are present. If more than 50 percent of FACU species have morphological adaptations for life in wetlands, this species is considered a hydrophyte and is re-assigned an indicator of FAC. The Dominance Test and Prevalence Test should be re-calculated, and the hydrophytic vegetation criteria is satisfied if either test is satisfied.

Hydric Soils: Hydric soils are defined in the Midwest Regional Supplement as "soils that have formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." Field indicators include matrix color, redox depletions and concentrations, sulfate reduction and resultant odor, organic matter accumulation, gleying, and soil texture. Specific types of hydric soils in the Midwest Region include, Histosols, Sandy Soils, Muck or Peat, and Loam or Clay Soils. Within these soil groups, there are many indicators specific to each type of soil.

Wetland Hydrology: The wetland hydrology criterion is often the most difficult to determine. Typically, the presence of water for a week or more during the growing season creates anaerobic conditions. Anaerobic conditions lead to the prevalence of wetland plants and soils. In the Midwest Regional Supplement, hydrology indicators are divided into four groups; Group A. Observation of Surface Water or Saturated Soils, Group B. Evidence of Recent Inundation,

Group B. Evidence of Current or Recent Soil Saturation, and Group D. Evidence from Other Site Conditions or Data. Within each group, indicators are divided into two categories, *Primary* and *Secondary*. In the absence of a primary indicator, two or more secondary indicators from any group are required to conclude that wetland hydrology is present. Some indicators of wetland hydrology are surface water, saturation, water marks, sediment deposits, water stained leaves, drainage patterns, sulfide odor, crayfish burrows, stunted or stressed plants, or geomorphic position.

2.2 STREAM METHODOLOGY

The location of potentially jurisdictional channels was determined using the Hamilton County Soil Survey, the USGS Quadrangle Map, and aerial photography. An onsite evaluation determined if additional channels, not shown on any existing mapping, were present within the project limits. There were no jurisdictional small streams documented.

3.0 RESULTS AND DISCUSSION

3.1 IDENTIFIED WETLAND AREAS

Wetland Site 1 (DP10 and DP11): Wetland Site 1 is a small bowl shaped area found north of Mud Creek in the southwestern portion of the project limits. This atypical emergent wetland is approximately 0.03 acre in size. Dominant vegetation consists of fuller's teasel (*Dipsacus fullonum*, FACU), Kentucky blue grass (*Poa pratensis*, FAC), giant foxtail (*Setaria faberi*, FACU), and panicled aster (*Symphyotrichum lanceolatum*, FAC). Hydrology for this wetland includes saturation at the surface.

Soil sampled for Wetland Site 1 is a clay loam with a matrix color of 10YR 4/2 and a redox concentration of 2.5YR 4/8. The soil mapped for this area is Westland Silty Clay Loam (We) which is considered a hydric soil. The boundaries of Site 1 are defined by change in topography and soil to the north, south, east, and west.

Wetland Site 1 is adjacent to and within the floodway of Mud Creek. This stream should be considered a "waters of the U.S." and it is our opinion that Wetland Site 1 would fall under the jurisdiction of the USACE if impacted. Final jurisdiction must be made by the USACE. The State of Indiana retains jurisdiction over isolated wetlands and would need to be notified prior to any work in the wetland if it is determined to be outside of federal jurisdiction.

3.2 NON-WETLAND DATA POINTS

Data Point 1: Data Point 1 is located adjacent to Mud Creek in the northeast corner of the project limits. Dominant vegetation at this data point consists of box elder (*Acer negundo*, FAC), limestone-meadow sedge (*Carex granularis*, FACW), reed canary grass (*Phalaris arundinacea*, FACW), and New England American aster (*Symphyotrichum novae-angliae*, FACW). The soil at this site has a matrix

color of 10YR 4/1 at 80% with redox concentrations of 7.5YR 5/6, and a matrix of 10YR 4/3 at 20%. This area exhibited one secondary indicator of wetland hydrology. Although this data point has hydrophytic vegetation and hydric soil, not all three wetland criteria were met therefore this data point does not qualify as wetland.

Data Point 2: Data Point 2 is located along the berm adjacent to Mud Creek. Dominant vegetation at this data point consists of American sycamore (*Platanus occidentalis*, FACW), common fox sedge (*Carex vulpinoidea*, FACW), and sweet-scented Joe pye-weed (*Eutrochium purpureum*, FAC). The soil at this site has a matrix color of 10YR 4/1 at 85% with redox concentrations of 7.5YR 5/6, and a matrix of 10YR 4/3 at 15%. This area exhibited one secondary indicator of wetland hydrology. This area exhibited one secondary indicator of wetland hydrology. Although this data point has hydrophytic vegetation and hydric soil, not all three wetland criteria were met therefore this data point does not qualify as wetland.

Data Point 3: Data Point 3 is northwest of Data Point 2 in the open field. Dominant vegetation at this data point consists of an unidentified fescue species (*Festuca spp.*, FACU), tall goldenrod (*Solidago altissima*, FACU), and New England American aster (FACW). The soil at this site has a matrix color of 10YR 4/1 at 80% with redox concentrations of 7.5YR 5/6, and a matrix of 10YR 4/3 at 20%. This area did not exhibit any indicators of wetland hydrology. Although this data point has hydric soil, not all three wetland criteria were met, therefore this data point does not qualify as wetland.

Data Point 4: Data Point 4 is located along the berm adjacent to Mud Creek and downstream from Data Point 2. Dominant vegetation at this data point consists of box elder (FAC), silver maple (*Acer saccharinum*, FACW), limestone-meadow sedge (FACW), common fox sedge (FACW), and sweet-scented Joe pye-weed (FAC). The soil at this site has a matrix color of 10YR 4/1 at 80% with redox concentrations of 7.5YR 5/6, and a matrix of 10YR 4/3 at 20%. This area exhibited one secondary indicator of wetland hydrology. Although this data point has hydrophytic vegetation and hydric soil, not all three wetland criteria were met therefore this data point does not qualify as wetland.

Data Point 5: Data Point 5 is located along the south bank of Big Cicero Creek and downstream from Data Point 4. Dominant vegetation at this data point consists of green ash (*Fraxinus pennsylvanica*, FACW), black walnut (*Juglans nigra*, FACU), multiflora rose (*Rosa multiflora*, FACU), common fox sedge (FACW), Canadian field thistle (*Cirsium arvense*, FACU), and sweet-scented Joe pye-weed (FAC). The soil at this site has a matrix color of 10YR 4/1 at 80% with redox concentrations of 7.5YR 5/6, and a matrix of 10YR 4/3 at 20%. This area exhibited one secondary indicator of wetland hydrology. Although this data point has hydrophytic vegetation and hydric soil, not all three wetland criteria were met therefore this data point does not qualify as wetland.

Data Point 6: Data Point 6 is located along the north bank of Mud Creek and downstream from Data Point 5. Dominant vegetation at this data point consists of garlic mustard (*Alliaria petiolata*, FAC), riverbank wild rye (*Elymus riparius*, FACW), Virginia creeper (*Parthenocissus quinquefolia*, FACU), and water parsnip (*Sium suave*, OBL). The soil at this site has a matrix color of 10YR 4/1 at 80% with a redox concentration of 7.5YR 5/6 and 10YR 4/3 at 20%. This area exhibited one secondary indicator of wetland hydrology. Although this data point has hydrophytic vegetation and hydric soil, not all three wetland criteria were met therefore this data point does not qualify as wetland.

Data Point 7: Data Point 7 is located in the open field north of Data Point 6. Dominant vegetation at this data point consists of an unidentified fescue species (FACU). The soil at this site has a matrix color of 10YR 4/1 at 80% with redox concentrations of 7.5YR 5/6, and a matrix of 10YR 4/3 at 20%. Although this data point has hydric soil, not all three wetland criteria were met therefore this data point does not qualify as wetland.

Data Point 8: Data Point 8 is located in the open field north of Data Point 7. Dominant vegetation at this data point consists of an unidentified fescue species (FACU). The soil at this site has a matrix color of 10YR 4/1 at 80% with redox concentrations of 7.5YR 5/6, and a matrix of 10YR 4/3 at 20%. Although this data point has hydric soil, not all three wetland criteria were met therefore this data point does not qualify as wetland.

Data Point 9: Data Point 9 is located in the open field in the center of the project limits. Dominant vegetation at this data point consists of an unidentified fescue species (FACU). The soil at this site has a matrix color of 10YR 4/1 at 85% with redox concentrations of 7.5YR 5/6, and a matrix of 10YR 4/3 at 15%. Although this data point has hydric soil, not all three wetland criteria were met therefore this data point does not qualify as wetland.

3.3 OTHER JURISDICTIONAL WATERS

Mud Creek flows southwest along the southern site boundary. The Ordinary High Water Mark (OHWM) of the channel was measured at approximately 2.0-feet above the bed of the channel. The channel width was approximately 20 feet wide within the project limits. Dominant substrates include mud, sand, and silt.

It is our opinion that Mud Creek should be considered "Waters of the U.S." and, therefore, under federal jurisdiction. Any work within the channel will require Clean Water Act approval from the USACE and the IDEM. Additionally, an IDNR Construction in a Floodway permit will be required for this project as the entire site is within regulatory floodway.

4.0 REFERENCE MATERIALS

4.1 EXHIBIT REFERENCES

The following reference materials were reviewed and used to assist in the "Waters"/Wetland field reconnaissance. They are included as Exhibits 1-6.

EXHIBIT 1 –Site Location Map

The project site includes the parcel of land bounded by 106th Street to the north, Cumberland Road to the west, and Mud Creek to the south, in Hamilton County, Indiana. Specifically, the project is located in Section 8 of Township 17 North, Range 5 East on the McCordsville 7.5 Minute Quadrangle.

EXHIBIT 2- National Wetlands Inventory Map

The National Wetland Inventory (NWI) does not indicate a wetland within the project limits; however, the NWI serves only as a large-scale guide; actual wetland locations and types often vary from that mapped. The NWI map may also predate the development of the subject wetland.

EXHIBIT 3 – Soils Map

The Soil Survey of Hamilton County, Indiana (1978) was reviewed to determine the location of hydric soils on site. Mapped hydric soil can be indicative of wetland conditions. Shoals Silt Loam (Sh) and Westland Silty Clay Loam (We) are found throughout the project limits. Westland Silty Clay Loam is considered a hydric soil.

EXHIBIT 4 –Topography Map

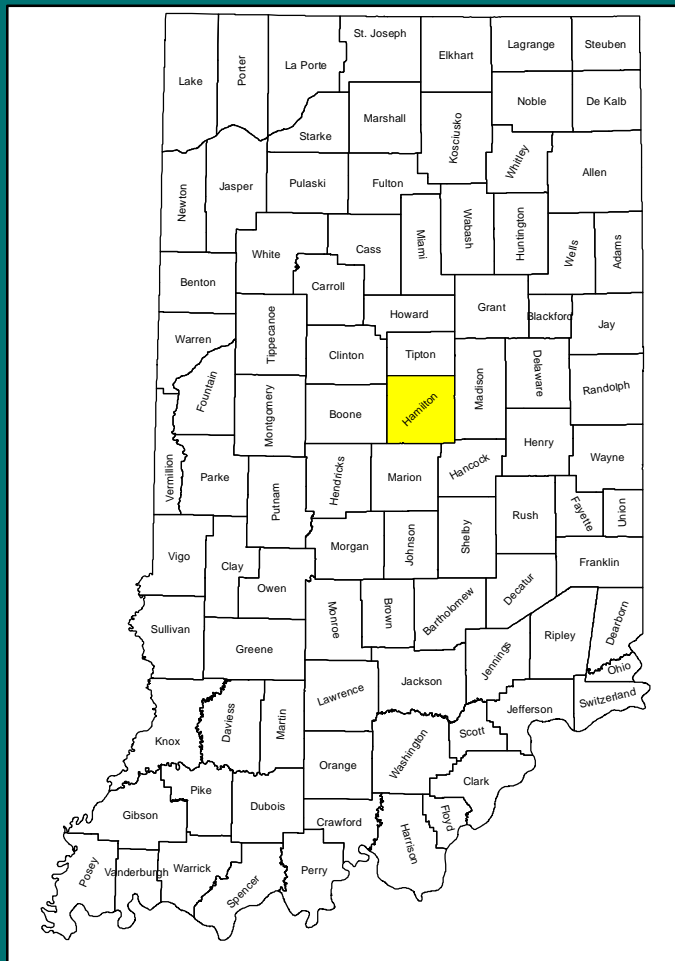
U.S.G.S. McCordsville Quadrangle map (1983) was reviewed to determine the local drainage pattern. The map indicates relatively flat terrain surrounding the project area.

EXHIBIT 5 – DFIRM

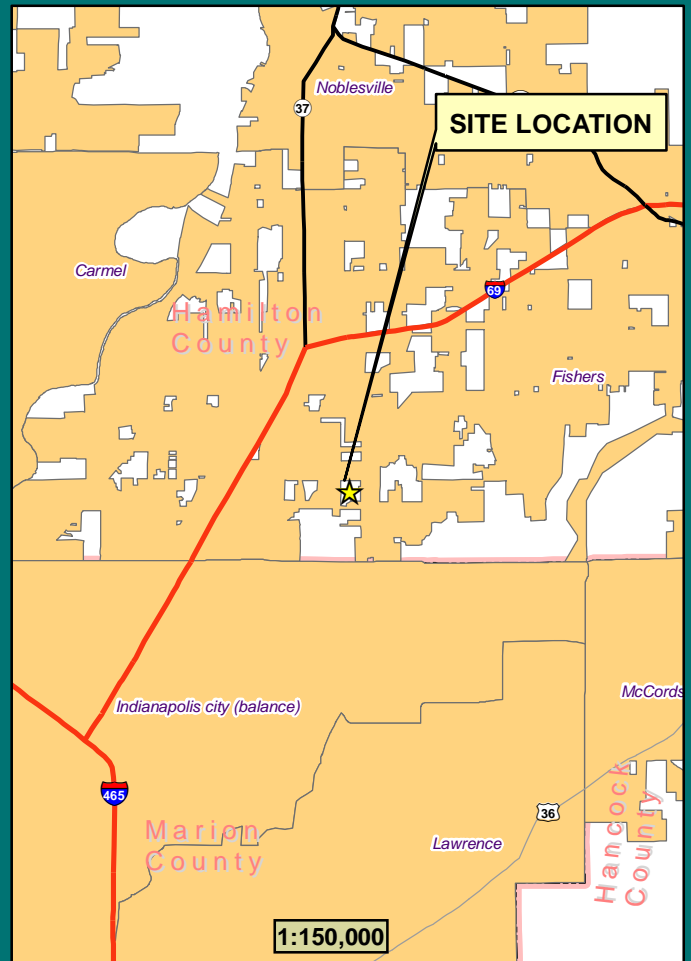
The Digital Flood Insurance Rate Map (DFIRM), Preliminary, July 2010, was reviewed to determine the location of floodplain or floodway within the study area. Mapped floodplains can be indicative of wetland hydrology. The FIRM indicates regulatory floodway throughout the project length.

EXHIBIT 6 –Delineated Wetlands, Data Points, & Photo Stations

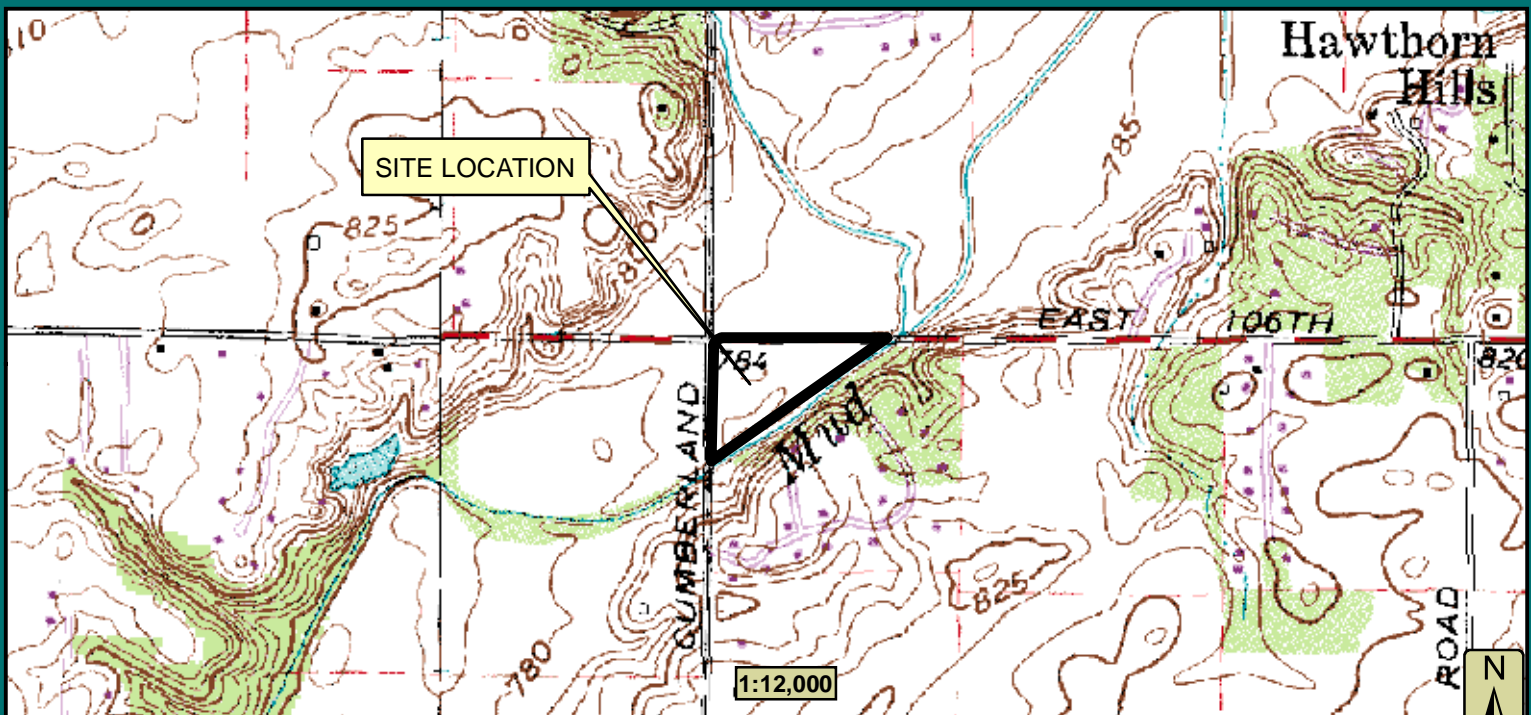
The aerial photograph of the site was reviewed to determine drainage patterns and identify poorly drained areas, or note changes in vegetation. The data points and photo stations are overlaid on the aerial photograph.




STATE MAP

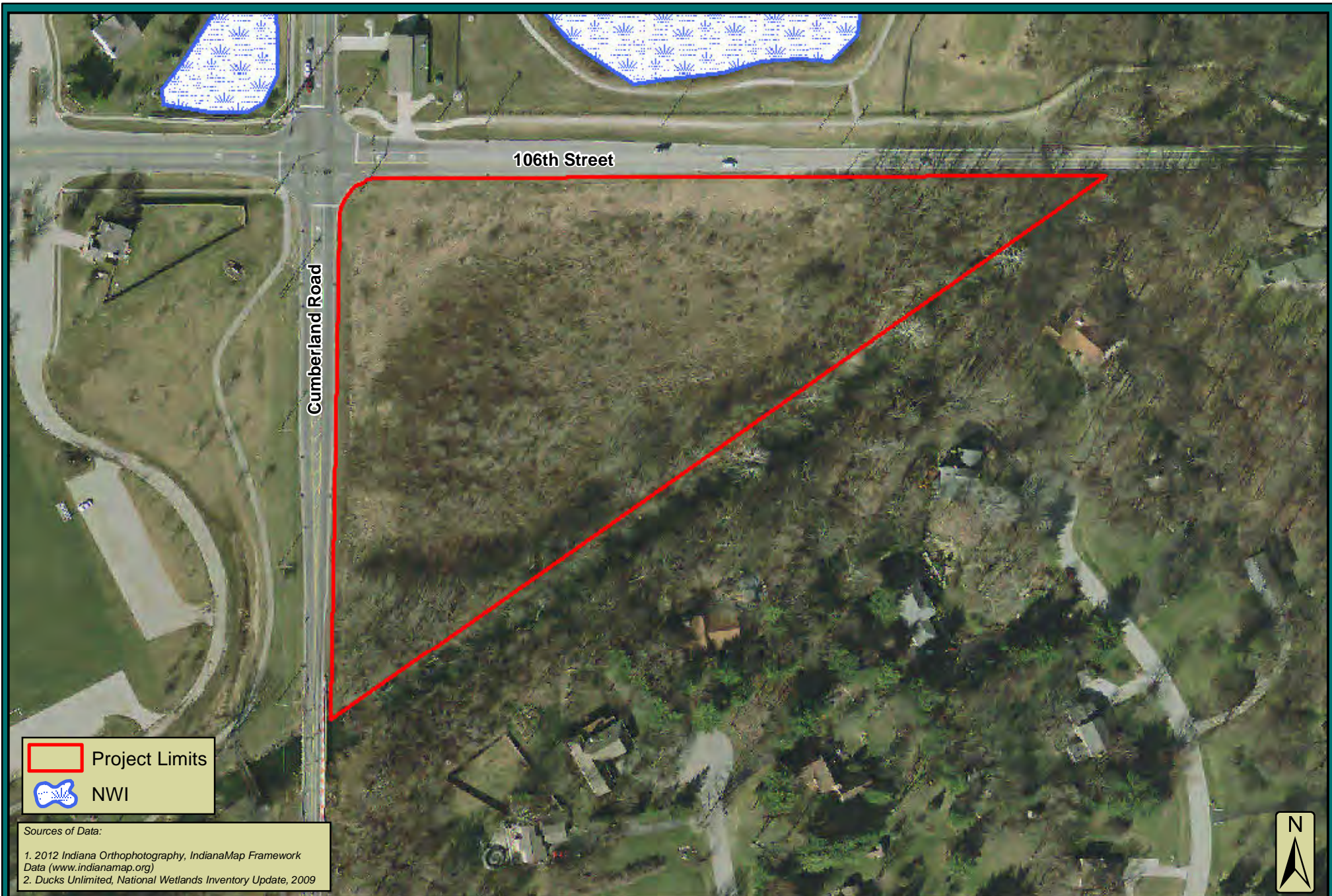



VICINITY MAP

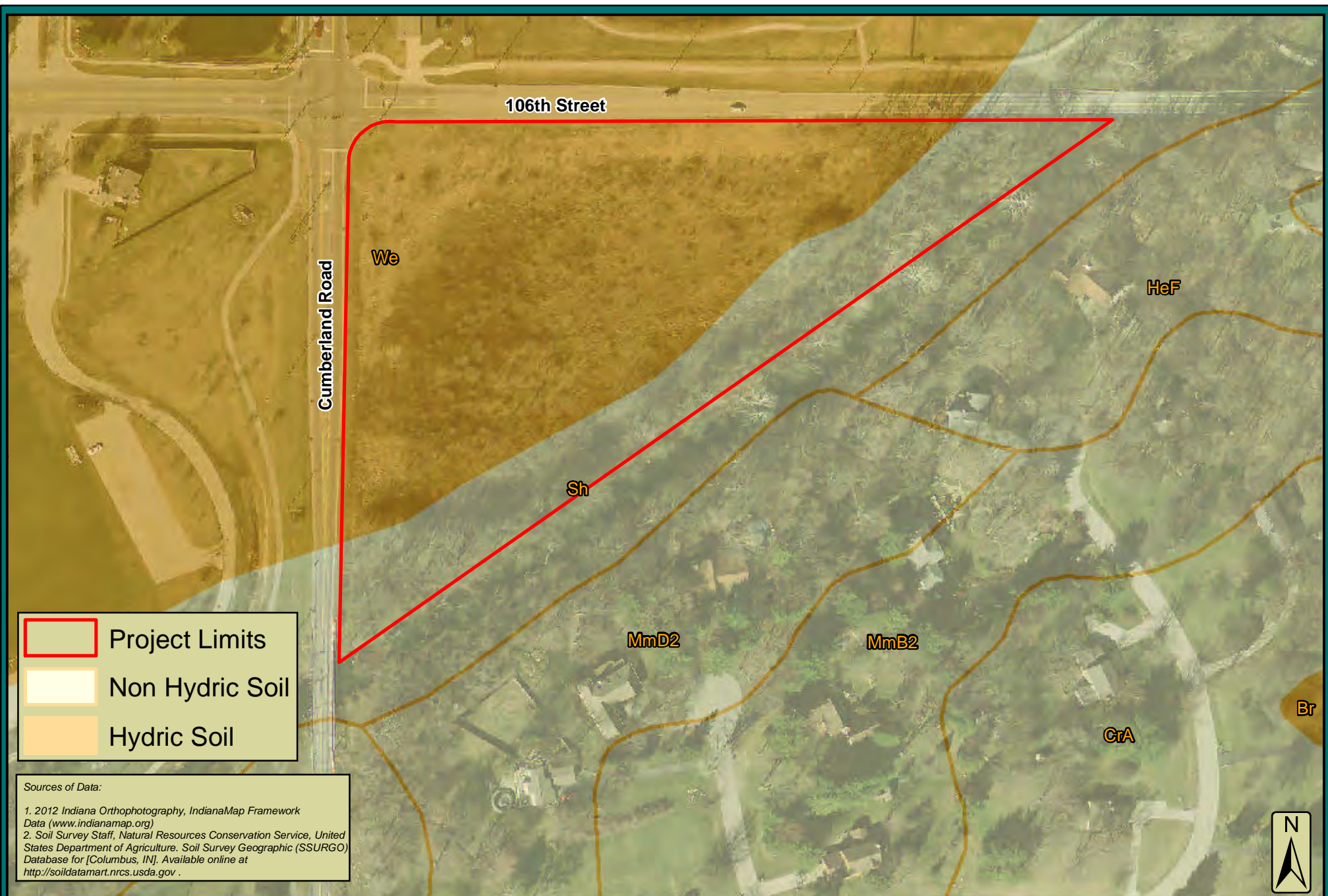



AREA MAP

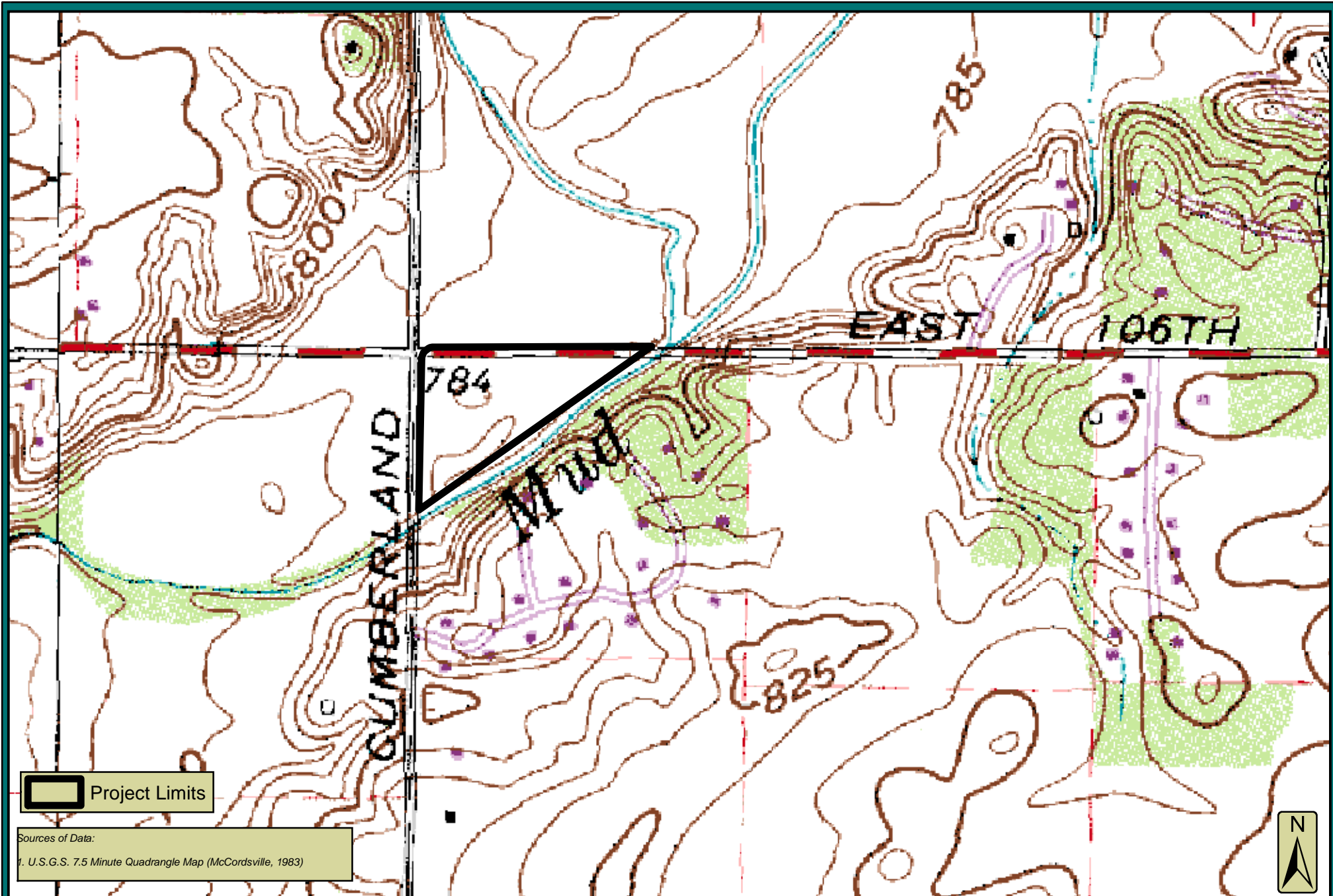
 Christopher B. Burke Engineering, LLC PNC Center, Suite 1368 South 115 West Washington Street Indianapolis, Indiana 46204 (t) 317.266.8000 (f) 317.632.3306	PROJECT:	Hamilton County- Mud Creek Wetland Delineation	PROJECT NO.	14-0004	APPROX. SCALE	as shown
	TITLE:	SITE LOCATION			DATE:	05/2014
					EXHIBIT	1



 Christopher B. Burke Engineering, LLC PNC Center, Suite 1368 South 115 West Washington Street Indianapolis, Indiana 46204 (t) 317.266.8000 (f) 317.632.3306	PROJECT:	Hamilton County- Mud Creek Wetland Delineation	PROJECT NO.	14-0004	APPROX. SCALE	1" = 150'
	TITLE:	NWI			DATE:	05/2014
					EXHIBIT	2



 Christopher B. Burke Engineering, LLC PNC Center, Suite 1368 South 115 West Washington Street Indianapolis, Indiana 46204 (t) 317.266.8000 (f) 317.632.3306	PROJECT: Hamilton County- Mud Creek Wetland Delineation		PROJECT NO. 14-0004	APPROX. SCALE 1" = 150'
	TITLE: SOIL			DATE: 05/2014
				EXHIBIT 3



Christopher B. Burke Engineering, LLC
PNC Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 (f) 317.632.3306

PROJECT: Hamilton County- Mud Creek
Wetland Delineation

PROJECT NO.
14-0004


APPROX. SCALE
1" = 500'

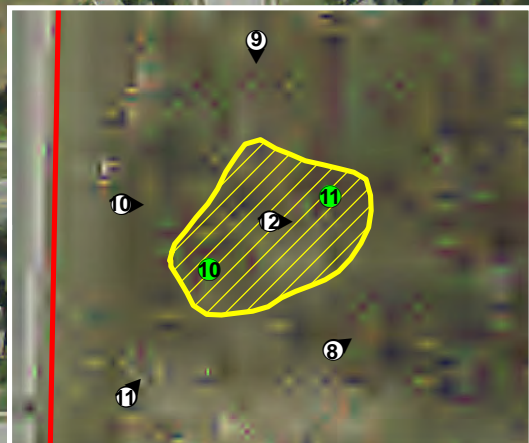
TITLE: TOPO

DATE: 05/2014

EXHIBIT 4



 Christopher B. Burke Engineering, LLC PNC Center, Suite 1368 South 115 West Washington Street Indianapolis, Indiana 46204 (t) 317.266.8000 (f) 317.632.3306	PROJECT:	Hamilton County- Mud Creek Wetland Delineation		PROJECT NO.	14-0004	APPROX. SCALE 1" = 150'
	TITLE:	FIRM				DATE: 05/2014
						EXHIBIT 5



Wetland 1 (PEM)
0.03 Acre

- Project Limits
- Delineated Wetland
- Data Point
- ⦿ Photo Station

Sources of Data:

1. 2012 Indiana Orthophotography, IndianaMap Framework Data (www.indianamap.org)
2. CBBEL Field Investigation, May 14, 2014



Christopher B. Burke Engineering, LLC
PNC Center, Suite 1368 South
115 West Washington Street
Indianapolis, Indiana 46204
(t) 317.266.8000 (f) 317.632.3306

PROJECT: Hamilton County- Mud Creek
Wetland Delineation

TITLE: DELINEATED WETLANDS, DATA POINTS, &
PHOTO STATIONS

PROJECT NO.
14-0004

APPROX. SCALE
1" = 150'

DATE: 12/2014

EXHIBIT 6



Appendix A - Photographs





CHRISTOPHER B. BURKE ENGINEERING, LLC.
 National City Center, Suite 1368 South
 115 West Washington Street
 Indianapolis, Indiana 46204
 TEL (317)266-8000 FAX (317)632-3306

PROJECT:
 Hamilton County- Mud Creek
 Wetland Delineation

PROJECT NO:
 14-0004

APPROX. SCALE:
 N/A

TITLE:
PROJECT PHOTOGRAPHS
 May 14th 2014

DATE: 05/14

SITE 1&2



CHRISTOPHER B. BURKE ENGINEERING, LLC.
 National City Center, Suite 1368 South
 115 West Washington Street
 Indianapolis, Indiana 46204
 TEL (317)266-8000 FAX (317)632-3306

PROJECT:
 Hamilton County- Mud Creek
 Wetland Delineation

PROJECT NO:
 14-0004

APPROX. SCALE:
 N/A

TITLE:
PROJECT PHOTOGRAPHS
 May 14th 2014

DATE: 05/14

SITE 3&4



CHRISTOPHER B. BURKE ENGINEERING, LLC.
 National City Center, Suite 1368 South
 115 West Washington Street
 Indianapolis, Indiana 46204
 TEL (317)266-8000 FAX (317)632-3306

PROJECT: Hamilton County- Mud Creek Wetland Delineation	PROJECT NO: 14-0004	APPROX. SCALE: N/A
		DATE: 05/14
TITLE: PROJECT PHOTOGRAPHS May 14 th 2014		SITE 5&6



CHRISTOPHER B. BURKE ENGINEERING, LLC.
 National City Center, Suite 1368 South
 115 West Washington Street
 Indianapolis, Indiana 46204
 TEL (317)266-8000 FAX (317)632-3306

PROJECT:
 Hamilton County- Mud Creek
 Wetland Delineation

PROJECT NO:
 14-0004

APPROX. SCALE:
 N/A

TITLE:
PROJECT PHOTOGRAPHS
 May 14th 2014

DATE: 05/14

SITE 7&8



CHRISTOPHER B. BURKE ENGINEERING, LLC.
 National City Center, Suite 1368 South
 115 West Washington Street
 Indianapolis, Indiana 46204
 TEL (317)266-8000 FAX (317)632-3306

PROJECT:
 Hamilton County- Mud Creek
 Wetland Delineation

PROJECT NO:
 14-0004

APPROX. SCALE:
 N/A

TITLE:
PROJECT PHOTOGRAPHS
 December 9th 2014

DATE: 12/14

SITE 9&10



CHRISTOPHER B. BURKE ENGINEERING, LLC.
 National City Center, Suite 1368 South
 115 West Washington Street
 Indianapolis, Indiana 46204
 TEL (317)266-8000 FAX (317)632-3306

PROJECT:
 Hamilton County- Mud Creek
 Wetland Delineation

PROJECT NO:
 14-0004

APPROX. SCALE:
 N/A

TITLE:
PROJECT PHOTOGRAPHS
 December 9th 2014

DATE: 12/14

SITE 11&12

Appendix B – Data Sheets



WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 5/14/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP1
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9412 Long: -85.9923 Datum: NAD83
 Soil Map Unit Name: Sh- Shoals Silt Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft. _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Acer negundo</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) _____ (B) Prevalence Index = B/A = _____
<u>20</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: 15ft. _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Herb Stratum (Plot size: 5ft. _____)				
1. <u>Carex granularis</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	Footnote: ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Phalaris arundinacea</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Symphotrichum novae-angliae</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>45</u> = Total Cover				
Woody Vine Stratum (Plot size: 5ft. _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

Sampling Point: DP1

HYDROLOGY

Primary Indicators (minimum of one is required; check all that apply)

US Army Corps of Engineers

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 5/14/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP2
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9408 Long: -85.9929 Datum: NAD83
 Soil Map Unit Name: Sh- Shoals Silt Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/>	No <input type="radio"/>	Is the Sampled Area within a Wetland?	Yes <input type="radio"/>	No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/>	No <input type="radio"/>			
Wetland Hydrology Present?	Yes <input type="radio"/>	No <input checked="" type="radio"/>			
Remarks:					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Platanus occidentalis</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>25</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	OBL species _____ x 1 = _____
3. _____	_____	_____	_____	FACW species _____ x 2 = _____
4. _____	_____	_____	_____	FAC species _____ x 3 = _____
5. _____	_____	_____	_____	FACU species _____ x 4 = _____
<u>0</u> = Total Cover				UPL species _____ x 5 = _____
				Column Totals: <u>0</u> (A) _____ (B)
				Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>5ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Carex vulpinoidea</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	
2. <u>Eutrochium purpureum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%
3. _____	_____	_____	_____	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
4. _____	_____	_____	_____	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
<u>40</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: <u>5ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: DP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-16	10YR 4/1	85	7.5YR 5/6	10		Clay/Loam	
0-16	10 YR 4/3	15					

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
---	---	---

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required: check all that apply)	Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Gauge or Well Data (D9) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____		
Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 5/14/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP3
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9412 Long: -85.9930 Datum: NAD83
 Soil Map Unit Name: We- Westland Silty Clay Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) _____ (B) Prevalence Index = B/A = _____
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: 15ft.)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is $\leq 3.0^1$ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
Herb Stratum (Plot size: 5ft.)				
1. <u>Festuca spp.</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Solidago altissima</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>Symphyotrichum novae-angliae</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
60 = Total Cover				Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Woody Vine Stratum (Plot size: 5ft.)				
1. _____				
2. _____				
3. _____				
0 = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: DP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/1	80	7.5YR 5/6	10			Clay/Loam	
0-16	10 YR 4/3	20						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
---	---

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 5/14/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP4
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9406 Long: -85.9935 Datum: NAD83
 Soil Map Unit Name: Sh- Shoals Silt Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Acer negundo</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Acer saccharinum</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
		<u>45</u>	= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15ft.</u>)				
1. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
		<u>0</u>	= Total Cover	
Herb Stratum (Plot size: <u>5ft.</u>)				
1. <u>Carex granularis</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Carex vulpinoidea</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Eutrochium purpureum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
		<u>50</u>	= Total Cover	
Woody Vine Stratum (Plot size: <u>5ft.</u>)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
2. _____	_____	_____	_____	
		<u>0</u>	= Total Cover	
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: DP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/1	80	7.5YR 5/6	5			Clay/Loam	
0-16	10 YR 4/3	20						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 5/14/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP5
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9404 Long: -85.9940 Datum: NAD83
 Soil Map Unit Name: Sh- Shoals Silt Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft. _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)
1. <u>Fraxinus pennsylvanica</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Juglans nigra</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) _____ (B) Prevalence Index = B/A = _____
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____	_____	_____	_____	
<u>50</u> = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Sapling/Shrub Stratum (Plot size: 15ft. _____)				
1. <u>Rosa multiflora</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	Remarks: (Include photo numbers here or on a separate sheet.)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Remarks: (Include photo numbers here or on a separate sheet.)
<u>15</u> = Total Cover				
Herb Stratum (Plot size: 5ft. _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
1. <u>Carex vulpinoidea</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	
2. <u>Cirsium arvense</u>	<u>15</u>	<u>No</u>	<u>FACU</u>	Remarks: (Include photo numbers here or on a separate sheet.)
3. <u>Eutrochium purpureum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	Remarks: (Include photo numbers here or on a separate sheet.)
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	Remarks: (Include photo numbers here or on a separate sheet.)
<u>50</u> = Total Cover				
Woody Vine Stratum (Plot size: 5ft. _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	Remarks: (Include photo numbers here or on a separate sheet.)
<u>0</u> = Total Cover				

SOIL

Sampling Point DP5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-16	10YR 4/1	80	7.5YR 5/6	10			Clay/Loam	
0-16	10 YR 4/3	20						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
Water Table Present? Yes ☐ No ☒ Depth (inches): _____
Saturation Present? Yes ☐ No ☒ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 5/14/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP6
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9400 Long: -85.9947 Datum: NAD83
 Soil Map Unit Name: Sh- Shoals Silt Loam NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
2. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
3. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
4. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
5. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
0 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
2. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
3. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
4. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
5. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
0 = Total Cover			
Herb Stratum (Plot size: <u>5ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Alliaria petiolata</u>	<u>15</u>	<u>No</u>	<u>FAC</u>
2. <u>Elymus riparius</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>
3. <u>Parthenocissus quinquefolia</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>
4. <u>Sium suave</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>
5. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
6. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
7. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
8. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
9. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
10. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
80 = Total Cover			
Woody Vine Stratum (Plot size: <u>5ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
2. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>
0 = Total Cover			

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across All Strata: 3 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: 0 (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point DP6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/1	80	7.5YR 5/6	5			Clay/Loam	
0-16	10 YR 4/3	20						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____
Water Table Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____
Saturation Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 5/14/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP7
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9401 Long: -85.9944 Datum: NAD83
 Soil Map Unit Name: Sh- Shoals Silt Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
0 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
0 = Total Cover			
Herb Stratum (Plot size: <u>5ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Festuca spp.</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
30 = Total Cover			
Woody Vine Stratum (Plot size: <u>5ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
0 = Total Cover			

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
 Total Number of Dominant Species Across All Strata: 1 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by:
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species 30 x 4 = 120
 UPL species _____ x 5 = _____
 Column Totals: 30 (A) _____ (B)
 Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:
☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DP7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-16	10YR 4/1	80	7.5YR 5/6	5		Clay/Loam	
0-16	10 YR 4/3	20					

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> 2 cm Muck (A10)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____
Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____
Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 5/14/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP8
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9412 Long: -85.9942 Datum: NAD83
 Soil Map Unit Name: Sh- Shoals Silt Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft. _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)	
1. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
2. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species <u>25</u> x 4 = <u>100</u> UPL species _____ x 5 = _____ Column Totals: <u>25</u> (A) _____ (B) Prevalence Index = B/A = <u>4.00</u>	
3. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
4. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
5. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
0 = Total Cover					
Sapling/Shrub Stratum (Plot size: 15ft. _____)					
1. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
2. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
3. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
4. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
5. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
0 = Total Cover					
Herb Stratum (Plot size: 5ft. _____)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Festuca spp.</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>		
2. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
3. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
4. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
5. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
6. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
7. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
8. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
9. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
10. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>	Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	
25 = Total Cover					
Woody Vine Stratum (Plot size: 5ft. _____)					
1. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
2. _____	_____	<input type="checkbox"/>	<input type="checkbox"/>		
0 = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Sampling Point: DP8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/1	80	7.5YR 5/6	10			Clay/Loam	
0-16	10 YR 4/3	20						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)			Secondary Indicators (minimum of two required)		
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Gauge or Well Data (D9) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5)			

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 5/14/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP9
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9410 Long: -85.9938 Datum: NAD83
 Soil Map Unit Name: We- Westland Silty Clay Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
		0 = Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>0</u> (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>15ft.</u>)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
		0 = Total Cover		
Herb Stratum (Plot size: <u>5ft.</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Festuca spp.</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
		20 = Total Cover		
Woody Vine Stratum (Plot size: <u>5ft.</u>)				Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
1. _____				
2. _____				
		0 = Total Cover		
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: DP9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/1	85	7.5YR 5/6	5			Clay/Loam	
0-16	10 YR 4/3	15						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Dark Surface (S7)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Iron-Manganese Masses (F12)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
---	---

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (D9)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____		Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____

Remarks: _____

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 12/9/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP10
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9407 Long: -85.9947 Datum: NAD83
 Soil Map Unit Name: We- Westland Silty Clay Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
0 = Total Cover			

Sapling/Shrub Stratum (Plot size: <u>15ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
0 = Total Cover			

Herb Stratum (Plot size: <u>5ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Poa pratensis</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>
2. <u>Setaria faberi</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
65 = Total Cover			

Woody Vine Stratum (Plot size: <u>5ft.</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
0 = Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species <u>25</u>	x 3 = <u>75</u>
FACU species <u>40</u>	x 4 = <u>160</u>
UPL species _____	x 5 = _____
Column Totals: <u>65</u> (A)	<u>235</u> (B)

Prevalence Index = B/A = 3.60

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present?

Yes ☐ No ☒

Remarks: (Include photo numbers here or on a separate sheet.)

This is an atypical wetland where the vegetation has been significantly disturbed. Only 2 of the 3 wetland criteria must be met in order for this data point to be considered wetland.

SOIL

Sampling Point: DP10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/2	100	2.5YR 4/8	20			Clay/Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Gauge or Well Data (D9) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Mud Creek City/County: Fishers/Hamilton Sampling Date: 12/9/14
 Applicant/Owner: Hamilton County State: IN Sampling Point: DP11
 Investigator(s): Sarah Wright; Jamie Cook Section, Township, Range: Section 8, Township 17N, Range 5E
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none
 Slope (%): _____ Lat: 39.9407 Long: -85.9946 Datum: NAD83
 Soil Map Unit Name: We- Westland Silty Clay Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
Hydric Soil Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Wetland Hydrology Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species <u>40</u> x 3 = <u>120</u> FACU species <u>50</u> x 4 = <u>200</u> UPL species _____ x 5 = _____ Column Totals: <u>90</u> (A) <u>320</u> (B) Prevalence Index = B/A = <u>3.50</u>
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: 15ft.)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				
Herb Stratum (Plot size: 5ft.)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Dipsacus fullonum</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Poa pratensis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Setaria faberi</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	
4. <u>Symphyotrichum lanceolatum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
90 = Total Cover				
Woody Vine Stratum (Plot size: 5ft.)				Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
1. _____				
2. _____				
0 = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				
This is an atypical wetland where the vegetation has been significantly disturbed. Only 2 of the 3 wetland criteria must be met in order for this data point to be considered wetland.				

SOIL

Sampling Point: DP11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-16	10YR 4/2	100	2.5YR 4/8	20		Clay/Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:		
Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Gauge or Well Data (D9) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

Appendix C –Permitting Summary and Jurisdictional Guidance



Permitting Summary

The following discussion includes information on USACE Section 404, IDEM Section 401 and IDNR Construction in a Floodway permitting processes. Permits are only necessary if the water resources (wetlands, other jurisdictional waters, and floodway areas) are impacted. If temporary impacts occur, the USACE and IDEM will require notification; however, mitigation might not be required if the water resources can be returned to their original condition. IDNR typically deals with temporary impacts on a case-by-case basis if the impacts are not part of a larger overall project. The following sections summarize the current permitting mechanisms used by the USACE, IDEM, and IDNR for the above mentioned permits. Other federal, state, and local permits may be required for work in and around wetlands, Waters of the U.S. (Waters) and floodway areas depending on the nature of the work.

U.S. Army Corps of Engineers and the Indiana Department of Environmental Management

Regional General Permit: The Regional General Permit (RGP) is a permitting process for Section 401 and Section 404 permits that replaced most of the nationwide permits in Indiana. The RGP was developed by the USACE and IDEM to speed up the permitting process for projects in Indiana that obviously do not involve more than minimal impacts to Waters. To qualify as an RGP with the USACE, the project can not involve cumulative discharges of dredged or fill material to more than 1 acre of Waters of the United States, including wetlands. To qualify as an RGP with IDEM, the project can't have cumulative impacts to more than 0.1 acre of wetlands, Special Aquatic Sites, or open water areas. In addition, IDEM specifies that the project cannot impact more than 300 linear feet of stream channel beneath the Ordinary High Water Mark (OHWM), and cannot involve any stream channel relocation. IDEM and the USACE require that notification be provided by the permittee at least 30 working days prior to the proposed waterbody impact for all activities in which an Individual Permit is not required. After 30 days, if there are no objections from IDEM, the project is approved and the application/notification form is the permit. Within 30 – 45 days, the USACE should respond in writing that the project qualifies for their Regional General Permit (RGP). As long as the 401 WQC is obtained from IDEM, the project is approved.

Individual Permit: Individual Section 401 and Section 404 permit applications are more involved than Regional General Permits. This type of permit covers projects that are larger in scope and/or typically cause more than minimal impacts to Waters of the United States. These projects are subjected to public review and comment as part of the permit process. Comments from the general public as well as other agencies are taken into consideration when applications are being reviewed. After the application is received by the USACE, a Public Notice is issued to the general public, special interest groups, local and state agencies,

and other federal agencies, giving them 15 to 30 days to comment on the proposed action. The USACE then considers all comments received (including the results of the IDEM Water Quality Certification review), consults with other federal agencies, and may request additional information from the applicant. A public hearing may also be required in order to present further details on the proposed activity to the public and give them an opportunity to voice their concerns. Following the public hearing, the USACE will decide whether to issue or deny the permit. If the permit is denied, the applicant will be given justification for the denial. The entire individual permit process for both IDEM and the USACE takes a minimum of 4 months, if no problems are encountered, but can legally take up to a year.

The following table summarizes the mitigation ratios that are typically used for impacts to wetlands under the USACE jurisdiction.

Table 1: USACE Mitigation Ratios

Wetland Type	Mitigation Ratio
Emergent	1:1 – 2:1
Scrub-Shrub/Immature Forest	2:1 – 3:1
Mature Forest	3:1 – 4:1
Unique and Rare Wetlands	4:1 and above

State Regulated Wetlands: The State of Indiana, through IDEM, retains jurisdiction over isolated (non-USACE jurisdictional) wetlands through recently passed legislation and administrative rules. The State Regulated Wetland rule identifies “Exempt Activities” and divides wetlands into three (3) classes: Class I includes wetlands of lower quality which are provided less protection. Class III includes wetlands of high quality which are provided a high level of protection. Class II, by definition, includes wetlands that are not Class I or Class III. Class III wetlands do not qualify for any permitting exemptions.

Key Exemptions for State Regulated Wetlands:

- A.) **Class I Size Exemption:** A Class I isolated wetland with an area of one-half (1/2) acre or less is exempt from regulation if it is the only wetland on the tract. If more than one Class I wetland is found on the tract, then the total exempt acreage is limited to the larger of the following:
- The acreage of the largest individual isolated wetland on the tract that qualifies for the exemption;
 - Fifty percent (50%) of the cumulative acreage of all individual isolated wetlands on the tract that would qualify for the exemption.
- B.) **Class II Size Exemption:** A Class II isolated wetland with an area of one-quarter (1/4) acre or less is exempt from regulation if it is the only wetland on the tract. If more than one Class II wetland is found on the tract, then the total exempt acreage is limited to the larger of the following:

- The acreage of the largest individual isolated wetland on the tract that qualifies for the exemption;
- Thirty three percent (33%) of the cumulative acreage of all individual isolated wetlands on the tract that would qualify for the exemption.

The following table summarizes the mitigation requirements for state regulated wetlands:

Table 2: State Regulated Wetland Mitigation Ratios

Wetland Class	Replacement Class	On-Site Ratio	Off-Site Ratio
Class I	Class II or III	1:1	1:1
Class I	Class I	1.5:1	1.5:1
Class II	Class II or III	1.5:1 Not Forested 2:1 Forested	2:1 Not Forested 2.5:1 Forested
Class III	Class III	2:1 Not Forested 2.5:1 Forested	2.5:1 Not Forested 3:1 Forested

Indiana Department of Natural Resources

Construction in a Floodway Permit: In order to control damage to property and protect against loss of life due to flooding, the State of Indiana has charged the IDNR with the responsibility of regulating all work conducted in Indiana's floodways to ensure that proposed work will not restrict the flow of flood waters and increase flood stages.

The IDNR generally requires a Construction in a Floodway Permit for any activity in or along a stream which drains over one (1) square mile, or 640 acres. Some types of projects, including state or county road bridges with a drainage area of less than 50 square miles, regulated drains less than 10 miles in total length, log jam removal, utility lines, outfall structures, and wetland restoration in a floodway are exempted from the IDNR permitting process either by state law or administrative code.

Jurisdictional Guidance

On December 2, 2008, the USEPA and USACE jointly issued a guidance memorandum regarding their jurisdiction in light of the Rapanos/Carabell Supreme Court Decision. With respect to isolated wetlands, the memo identified "significant nexus" to include consideration of hydrologic factors including the following:

- proximity to the traditional navigable water,
- size of the watershed,
- average annual rainfall, and
- average annual winter snow pack.

The memo also identified “significant nexus” to include consideration of ecologic factors including the following:

- provision of aquatic habitat that supports a traditional navigable water,
- potential of wetlands to trap and filter pollutants or store flood waters, and
- maintenance of water quality in traditional navigable waters.

Based on the guidance, the agencies will assert jurisdiction over the following waters:

- Traditional Navigable Waters (TNWs)
- Wetlands adjacent to TNWs
- Non-Navigable tributaries of TNWs that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally Relatively Permanent Waters (RPWs)
- Wetlands that directly abut RPWs

The agencies will decide jurisdiction over the following waters based on a fact specific analysis:

- Non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to but not directly abutting an RPW

The agencies will generally not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent or short duration flow)
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water

Wetlands are considered to have a significant nexus to other Waters if the subject wetland was found to be positioned immediately adjacent to a jurisdictional channel or within the floodplain of a jurisdictional channel. Wetlands found in these positions are assumed to have a surface water exchange with other Waters that could affect the flow quality and quantity within those Waters.

APPENDIX C - PERMITS



STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES



CERTIFICATE OF APPROVAL
CONSTRUCTION IN A FLOODWAY

APPLICATION # : FW-27917

MAILED: July 01, 2015

STREAM : Mud Creek

APPLICANT : Hamilton County Surveyors Office
Kenton Ward
One Hamilton County Square Suite 188
Noblesville, IN 46060-2653

AGENT : Christopher B Burke Engineering LLC
Brian Meunier, PE
115 West Washington Street, Suite 1368 South
Indianapolis, IN 46204

AUTHORITY : IC 14-28-1 with 312 IAC 10

DESCRIPTION : An upstream channel transition necessary for the future implementation of improvements to the Cumberland Road Bridge crossing will be constructed, as well as the addition of wetland and multiuse trail features on the adjacent parcel. The channel transition consists of a shelf in the right channel bank having the following approximate dimensions: 840± foot length, 4-foot depth, 3:1 side slopes, width tapering from 0 to 90'. The channel transition also includes scour protection measures. Several plots will be constructed for the future installation of wetland plantings. Minor grading adjustments are planned to promote an environment suitable for the planned wetland types. A multiuse trail around the perimeter and between the wetland plots and an observation platform are also included. Details of the project are contained in information received electronically at the Division of Water on March 23, 2015 and in plans and information received at the Division of Water on March 13, 2015, May 6, 2015, May 8, 2015, May 13, 2015, May 15, 2015 and June 2, 2015.

LOCATION : DOWNSTREAM: Along the right (north) bank beginning on the east side of Cumberland Road and continuing upstream for approximately 850' near Fishers, Fall Creek Township, Hamilton County
Section 8, T 17N, R 5E, McCordsville Quadrangle
UTM Coordinates: Downstream 4421541 North, 585872 East
UPSTREAM:
UTM Coordinates: Upstream 4421740 North, 586150 East

APPROVED BY : 
Markita Shepherdson, CFM, Sr Environmental Manager
Division of Water

APPROVED ON : July 1, 2015

Included: Notice Of Right To Administrative Review - General Conditions - Special Conditions - Service List

Attachments: Attachment for permit.pdf



**STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES**



**CERTIFICATE OF APPROVAL
CONSTRUCTION IN A FLOODWAY**

**STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES**

NOTICE OF RIGHT TO ADMINISTRATIVE REVIEW

APPLICATION #: FW- 27917

This signed document constitutes the issuance of a permit by the Department of Natural Resources, subject to the conditions and limitations stated on the pages entitled "General Conditions" and "Special Conditions".

The permit or any of the conditions or limitations which it contains may be appealed by applying for administrative review. Such review is governed by the Administrative Orders and Procedures Act, IC 4-21.5, and the Department's rules pertaining to adjudicative proceedings, 312 IAC 3-1.

In order to obtain a review, a written petition must be filed with the Division of Hearings within 18 days of the mailing date of this notice. The petition should be addressed to:

Director
Division of Hearings
Indiana Government Center North, Room N501A
100 North Senate Avenue
Indianapolis, Indiana 46204

The petition must contain specific reasons for the appeal and indicate the portion or portions of the permit to which the appeal pertains.

If an appeal is filed, the final agency determination will be made by the Natural Resources Commission following a legal proceeding conducted before an Administrative Law Judge. The Department of Natural Resources will be represented by legal counsel.

**STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES**

GENERAL CONDITIONS

APPLICATION #: FW- 27917

- (1) If any archaeological artifacts or human remains are uncovered during construction, federal law and regulations (16 USC 470, et seq.; 36 CFR 800.11, et al) and State Law (IC 14-21-1) require that work must stop and that the discovery must be reported to the Division of Historic Preservation and Archaeology within 2 business days.

Division of Historic Preservation and Archaeology
Room W274
402 West Washington Street
Indianapolis, IN 46204

Telephone: (317) 232-1646, FAX: (317) 232-8036

- (2) This permit must be posted and maintained at the project site until the project is completed.
- (3) This permit does not relieve the permittee of the responsibility for obtaining additional permits, approvals, easements, etc. as required by other federal, state, or local regulatory agencies. These agencies include, but are not limited to:

Agency	Telephone Number
Hamilton County Drainage Board	(317) 776-8495
US Army Corps of Engineers	(502) 315-6686
Indiana Department of Environmental Management	(317) 233-8488 or (800) 451-6027
Local city or county planning or zoning commission	

- (4) This permit must not be construed as a waiver of any local ordinance or other state or federal law.
- (5) This permit does not relieve the permittee of any liability for the effects which the project may have upon the safety of the life or property of others.
- (6) This permit may be revoked by the Department of Natural Resources for violation of any condition, limitation or applicable statute or rule.
- (7) This permit shall not be assignable or transferable without the prior written approval of the Department of Natural Resources. To initiate a transfer contact:

Mr. Michael W. Neyer, PE, Director
Division of Water
Room W264
402 West Washington Street
Indianapolis, IN 46204

Telephone: (317) 232-4160, Toll Free: (877) 928-3755
FAX: (317) 233-4579

- (8) The Department of Natural Resources shall have the right to enter upon the site of the permitted activity for the purpose of inspecting the authorized work.
- (9) The receipt and acceptance of this permit by the applicant or authorized agent shall be considered as acceptance of the conditions and limitations stated on the pages entitled "General Conditions" and "Special Conditions".

**STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES**

SPECIAL CONDITIONS

APPLICATION #: FW- 27917

PERMIT VALIDITY : This permit is valid for 24 months from the "Approved On" date shown on the first page. If construction work in the floodway has not been completed by July 01, 2017 the permit will become void. This permit may be renewed one (1) time for a period not to exceed two (2) additional years only if a written request for the two (2) year permit renewal is received by DNR, Division of Water prior to July 01, 2017. Thereafter the permit will become void and a new permit will be required in order to continue work on the project.

This permit becomes effective 18 days after the "MAILED" date shown on the first page. If both a petition for review and a petition for a stay of effectiveness are filed before this permit becomes effective, any part of the permit that is within the scope of the petition for stay is stayed for an additional 15 days.

CONFORMANCE : Other than those measures necessary to satisfy the "General Conditions" and "Special Conditions", the project must conform to the information received by the Department of Natural Resources on: March 13, 2015, March 23, 2015, May 6, 2015, May 8, 2015, May 13, 2015, May 15, 2015 and June 2, 2015. Any deviation from the information must receive the prior written approval of the Department.

Number	Special Condition
(1)	revegetate all bare and disturbed areas, except for land that will be used for crop production in the next growing season, with a mixture of grasses (excluding all varieties of tall fescue) and legumes as soon as possible upon completion; low endophyte tall fescue may be used in the ditch bottom and side slopes only
(2)	do not work in the waterway from April 1 through June 30 without the prior written approval of the Division of Fish and Wildlife
(3)	do not cut any trees suitable for Indiana bat roosting (greater than 3 inches dbh, living or dead, with loose hanging bark) from April 1 through September 30
(4)	stabilize banks as work progresses so that no more than 200 lineal feet are left disturbed at the completion of the workday
(5)	revegetate all areas disturbed during debris and sediment removal; permanently seed and fertilize disturbed ditch banks at the end of each day; revegetate areas with one of the seeding mixtures or species listed in the VEGETATIVE STABILIZATION AND SEEDING PRACTICE of the Indiana Drainage Handbook from the Division of Water, Indiana Department of Natural Resources (October 1996) or other species that are approved by the Department as being suitable to site and climate conditions; at the completion of the project, re-seed and fertilize areas that do not have sufficient vegetative cover to control erosion
(6)	revegetate all spoil materials deposited in areas not used for crop production
(7)	use appropriate structural armament in channel straightening transition areas to blend with the existing channel; use one of the appropriate structural armament practices listed in Section 5.5 of the INDIANA DRAINAGE HANDBOOK from the division of water, Indiana Department of Natural Resources (October 1996)
(8)	a representative of the Surveyor's Office or their contractor shall inspect erosion and sediment control practices daily and repair as necessary until all construction is complete and disturbed areas are permanently stabilized

**STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES**

SPECIAL CONDITIONS

APPLICATION #: FW- 27917

- (9) install appropriate sediment control measures to prevent the flow of sediment laden water back into the watercourse
- (10) all work must conform with the existing bank at the upstream and downstream limits of the project site
- (11) except for trees cabled in-place for bank protection, do not leave felled trees, brush, or other debris in the floodway *
- (12) approval of this project is contingent upon Special Condition No. 13 from FW-27511 being followed: Condition No. 13 reads as follows: approval of this project is contingent on the applicant and all future property owners maintaining the proposed 2:1 slope along about 130' of the north streambank (includes the spillslope at the north abutment of the Cumberland Road Bridge) in the same shape and grade in perpetuity as shown on the plan labeled Plan & Profile Line "PR-C"; Sheet 8 of 41, received at the Division of Water on September 12, 2014 (copy attached)
- (13) except for the material placed as shown on the plans received at the Division of Water on March 13, 2015, place all excavated material landward of the floodway *
- (14) * NOTE: for regulatory purposes, the floodway is defined as that shown on Panel 253 of the Hamilton County Flood Insurance Rate Map dated November 19, 2014

**STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES**

SERVICE LIST

APPLICATION #: FW- 27917

Hamilton County Surveyors Office
Kenton Ward
One Hamilton County Square Suite 188
Noblesville, IN 46060-2653

Christopher B Burke Engineering LLC
Brian Meunier, PE
115 West Washington Street, Suite 1368 South
Indianapolis, IN 46204

Mark D and Kindsey A Frazee
9928 Cumberland Ridge Court
Fishers, IN 46037

Nancy N Goebel
10416 Cumberland Ridge Court
Fishers, IN 46037

Hamilton County Drainage Board
1 Hamilton County Square, Suite 188
Noblesville, IN 46060-2653

Hamilton County SWCD
Mark McCauley
1717 Pleasant Street, Suite 100
Noblesville, IN 46060

Hamilton Southeastern Utilities
11901 Lakeside Drive
Fishers, IN 46037

Indiana Department of Natural Resources
Division of Law Enforcement
District 4 Headquarters
3734 Mounds Road
Anderson, IN 46017

Chuck Kiphart
One Hamilton County Square, Suite 306
Noblesville, IN 46060

Joshua P and Paula A Morgan
9919 106th Street
Fishers, IN 46037

Mud Creek Golf Course Inc
10955 Fall Road
Fishers, IN 46038

SCSC Properties LLC
15550 Stoney Creek Way
Noblesville, IN 46060

Robert and Peggy Shine
10410 Cumberland Ridge Court
Fishers, IN 46037

Marshall M Suzanne
10422 Cumberland Ridge Court
Fishers, IN 46037

Town of Fishers
1 Municipal Drive
Fishers, IN 46037

Town of Fishers
Jason Armour, PE, CFM
Public Works Department
One Municipal Drive
Fishers, IN 46038

William and Elizabeth Trinkle
9945 Cumberland Ridge Lane
Fishers, IN 46038

US Army Corps of Engineers
Louisville District
PO Box 59
Louisville, KY 40201-0059

Ronald L and Linda H Williams
9922 Cumberland Ridge Court
Fishers, IN 46037

Staff Assignment:

Administrative
Technical
Environmental
Engineering

: Markita Shepherdson, CFM
: Markita Shepherdson, CFM
: Erin Basiger
: Stephen M. Bradley

Construction/Stormwater Pollution Prevention Plan Technical Review and Comment (*Form 1*)

Project Information	Project Name: Mud Creek High Flow Shelf and Constructed Wetland		County: Hamilton		
	Plan Submittal Date: 04/08/15		Hydrologic Unit Code: 5120201110040		
	Project Location Description: SE Corner of Cumberland Rd and 106th Street				
	Latitude and Longitude: Lat: 39-56'-24" N Long: 86-59'-42" W				
	Civil Township: Fall Creek	Quarter:	Section: 8	Township: 17N	Range: 5E
	Project Owner Name: Hamilton County Surveyor				
	Contact: Kenton Ward				
	Address: 1 Hamilton County Square				
	City: Noblesville		State: IN	Zip: 46060	
	Phone: 317-776-8495	FAX:	E-Mail:		
Plan Review	Plan Preparer Name: Brian Meunier PE				
	Affiliation: Christopher Burke Engineering LLC				
	Address: 115 W. Washington St Suite 1368 South				
	City: Indianapolis		State: IN	Zip: 46204	
	Phone: 317-266-8000	FAX:	E-Mail: bmckenna@cbbel-in.com		
	Review Date: 4/7/24/24/15015				
	Principal Plan Reviewer: John B. South P.E. CPESC				
	Agency: Hamilton County Soil and Water Conservation District				
	Address: 1717 Pleasant Street Suite 100				
	City: Noblesville		State: IN	Zip: 46060	
Phone: 317-773-2181	FAX: 317-776-1101	E-Mail: john.south@hamiltoncounty.in.gov			
Assisted By:					
<input checked="" type="checkbox"/> PLAN IS ADEQUATE: A comprehensive plan review has been completed and it has been determined that the plan satisfies the minimum requirements and intent of 327 IAC 15-5.					
<input type="checkbox"/> Please refer to additional information included on the following page(s).					
<input checked="" type="checkbox"/> Submit Notice of Intent (NOI): Attach a copy of this cover page when submitting the NOI to the Indiana Department of Environmental Management. Construction activities may begin 48 hours following the submittal of the NOI. A copy of the NOI must also be sent to the Reviewing Authority (e.g. SWCD, DNR).					
<input type="checkbox"/> A preliminary plan review has been completed; a comprehensive review will not be completed within the 28-day review period. The reviewing authority reserves the right to perform a comprehensive review at a later date and revisions to the plan may be required at that time to address deficiencies.					
<input type="checkbox"/> Please refer to additional information included on the following page(s).					
<input type="checkbox"/> Submit Notice of Intent (NOI): Attach a copy of this cover page when submitting the NOI to the Indiana Department of Environmental Management. Construction activities may begin 48 hours following the submittal of the NOI. A copy of the NOI must also be sent to the Reviewing Authority (e.g. SWCD, DNR).					
<input type="checkbox"/> PLAN IS DEFICIENT: Significant deficiencies were identified during the plan review.					
<input type="checkbox"/> Please refer to additional information included on the following page(s).					
<input type="checkbox"/> DO NOT file a Notice of Intent for this project.					
<input type="checkbox"/> DO NOT commence land disturbing activities until all deficiencies are adequately addressed, the plan re-submitted, and notification has been received that the minimum requirements have been satisfied.					
<input type="checkbox"/> Plan Revisions <input type="checkbox"/> Deficient Items should be mailed or delivered to the Principal Plan Reviewer identified in the Plan Review Section above.					

Construction/Stormwater Pollution Prevention Plan - Technical Review and Comment (Form 1)

Project Name: Mud Creek High Flow Shelf and Constructed Wetland

Date Reviewed: 4/7/24/24/15015

The technical review and comments are intended to evaluate the completeness of the Construction/Stormwater Pollution Prevention Plan for the project. The Plan submitted was not reviewed for the adequacy of the engineering design. All measures included in the plan, as well as those recommended in the comments should be evaluated as to their feasibility by a qualified individual with structural measures designed by a qualified engineer. The Plan has not been reviewed for other local, state, or federal permits that may be required to proceed with this project. Additional information, including design calculations may be requested to further evaluate the Plan.

All proposed stormwater pollution prevention measures and those referenced in this review must meet the design criteria and standards set forth in the "Indiana Stormwater Quality Manual" from the Indiana Department of Natural Resources, Division of Soil Conservation or similar Guidance Documents.

Please direct questions and/or comments regarding this plan review to:

John B. South P.E. CPESC

Please refer to the address and contact information identified in the Plan Review Section on page 1.

Assessment of Construction Plan Elements (Section A)

The Construction Plan Elements are adequately represented to complete a plan review:

☒ Yes ☐ No

The items checked below are deficient and require submittal to meet the requirements of the rule.

A		A	
<input type="checkbox"/> 1	Index showing locations of required Plan Elements	<input type="checkbox"/> 2	11 by 17 inch plat showing building lot numbers/boundaries and road layout/names
<input type="checkbox"/> 3	Narrative describing the nature and purpose of the project	<input type="checkbox"/> 4	Vicinity map showing project location
<input type="checkbox"/> 5	Legal Description of the Project Site (Include Latitude and Longitude - NOI Requirement)	<input type="checkbox"/> 6	Location of all lots and proposed site improvements (roads, utilities, structures, etc.)
<input type="checkbox"/> 7	Hydrologic unit code (14 Digit)	<input type="checkbox"/> 8	Notation of any State or Federal water quality permits
<input type="checkbox"/> 9	Specific points where stormwater discharge will leave the site	<input type="checkbox"/> 10	Location and name of all wetlands, lakes and water courses on and adjacent to the site
<input type="checkbox"/> 11	Identification of all receiving waters	<input type="checkbox"/> 12	Identification of potential discharges to ground water (abandoned wells, sinkholes, etc.)
<input type="checkbox"/> 13	100 year floodplains, floodways, and floodway fringes	<input type="checkbox"/> 14	Pre-construction and post construction estimate of Peak Discharge (10 Year storm event)
<input type="checkbox"/> 15	Adjacent landuse, including upstream watershed	<input type="checkbox"/> 16	Locations and approximate boundaries of all disturbed areas (Construction Limits)
<input type="checkbox"/> 17	Identification of existing vegetative cover	<input type="checkbox"/> 18	Soils map including soil descriptions and limitations
<input type="checkbox"/> 19	Locations, size and dimensions of proposed stormwater systems (e.g. pipes, swales and channels)	<input type="checkbox"/> 20	Plans for any off-site construction activities associated with this project (sewer/water tie-ins)
<input type="checkbox"/> 21	Locations of proposed soil stockpiles and/or borrow/disposal areas	<input type="checkbox"/> 22	Existing site topography at an interval appropriate to indicate drainage patterns
<input type="checkbox"/> 23	Proposed final topography at an interval appropriate to indicate drainage patterns		

Construction/Stormwater Pollution Prevention Plan - Technical Review and Comment (Form 1)

Project Name: Mud Creek High Flow Shelf and Constructed Wetland
Date Reviewed: 4/7/24/24/15015

Assessment of Stormwater Pollution Prevention Plan (Sections B & C)

Stormwater Pollution Prevention Plan - Construction Component (Section B)

	Adequate	Deficient	Not Applicable	B	
					<i>The construction component of the Stormwater Pollution Prevention Plan includes stormwater quality measures to address erosion, sedimentation, and other pollutants associated with land disturbance and construction activities. Proper implementation of the plan and inspections of the construction site are necessary to minimize the discharge of pollutants. The Project Site Owner should be aware that unforeseen construction activities and weather conditions may affect the performance of a practice or the effectiveness of the plan. The plan must be a flexible document, with provisions to modify or substitute practices as necessary.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			1 Description of potential pollutant sources associated with construction activities
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			2 Sequence describing stormwater quality measure implementation relative to land disturbing activities
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			3 Stable construction entrance locations and specifications (at all points of ingress and egress)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			4 Sediment control measures for sheet flow areas
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			5 Sediment control measures for concentrated flow areas
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			6 Storm sewer inlet protection measure locations and specifications
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			7 Runoff control measures (e.g. diversions, rock check dams, slope drains, etc.)
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			8 Storm water outlet protection specifications
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			9 Grade stabilization structure locations and specifications
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			10 Location, dimensions, specifications, and construction details of each stormwater quality measure
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			11 Temporary surface stabilization methods appropriate for each season (include sequencing)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			12 Permanent surface stabilization specifications (include sequencing)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			13 Material handling and spill prevention plan
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			14 Monitoring and maintenance guidelines for each proposed stormwater quality measure
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			15 Erosion & sediment control specifications for individual building lots

Stormwater Pollution Prevention Plan - Post Construction Component (Section C)

	Adequate	Deficient	Not Applicable	C	
					<i>The post construction component of the Stormwater Pollution Prevention Plan includes the implementation of stormwater quality measures to address pollutants that will be associated with the final landuse. Post construction stormwater quality measures should be functional upon completion of the project. Long term functionality of the measures are critical to their performance and should be monitored and maintained.</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			1 Description of pollutants and their sources associated with the proposed land use
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			2 Sequence describing stormwater quality measure implementation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			3 Description of proposed post construction stormwater quality measures <i>(Include a written description of how these measures will reduce discharge of expected pollutants)</i>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			4 Location, dimensions, specifications, and construction details of each stormwater quality measure
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			5 Description of maintenance guidelines for post construction stormwater quality measures

Construction/Stormwater Pollution Prevention Plan - Technical Review and Comment

Project Name: Mud Creek High Flow Shelf and Constructed Wetland

Date Reviewed: 4/7/24/24/15015

cc: Kenton Ward, File

UTILITY RELOCATION PLANS



Brian Cravens
240 N Meridian St. 2nd Floor
Indianapolis, IN 46204

T: 317.610-5424
C: 317.796.5793
Bc3785@att.com
www.att.com

Date: 9/06/2016

Subject:

Utility Relocation Work Plan for:	AT&T Distribution
Facility Type:	Telecommunications

Section 1: General Information

A. INDOT/LPA Project Information

1. DES NO.:	PB-14-004
2. Route Number:	Cyntheanne Rd.
3. Location:	0.42 Miles North of 146 th St.
4. Work Type:	Small Structure Replacement
5. Letting Date:	2/27/17
6. Date Work Plan Needed	7/1/16
7. Target Date for Utility to be out of conflict with INDOT Project	1/1/17
Intermediate Phase	
Intermediate Phase	

B. Utility Designated Contact – Information

1. Designated Contact Name:	Brian Cravens
2. Office telephone:	317-610-5424
3. Mobile telephone:	317-796-5793
4. Email address:	Bc3785@att.com
5. Agency name	AT&T Indiana
6. Address:	240 N Meridian St
7. City, State, Zip Code:	Indianapolis, IN 46204
8. Construction Emergency Contact:	
Name:	Dan Weaver
Number:	765-481-7196

C. By signing here, the Utility has determined to the best of their ability that they do not have facilities within the project area:

Signature of Utility Representative

Print Name

Date

Note: A signature by the utility representative at item “(C)” fulfills the requirement to complete the rest of this form and affirms their contact information above is correct



Brian Cravens
240 N Meridian St. 2nd Floor
Indianapolis, IN 46204

T: 317.610-5424
C: 317.796.5793
Bc3785@att.com
www.att.com

D. INDOT/LPA Utility Coordinator Contact Information

1.	Utility Coordinator Name:	Nick Batta
2.	Office Telephone:	317-334-6820
3.	Mobile Telephone:	317-409-0665
4.	Email Address:	NBatta@lochgroup.com
5.	Agency Name:	Lochmueller Group
6.	Address:	3502 Woodview Trace Suite 150
7.	City, State, Zip Code	Indianapolis, IN 46268

Section 2: A narrative description of the facility relocation that will be required. [IAC 13-3-3(c)]

- A. Describe what types of existing active and inactive facilities are present.
AT&T has a buried copper cable present within the limits of this project.
- B. Describe the location of existing active and inactive facilities.
AT&T is located as shown on the plans
- C. Describe what will be done with existing active and inactive facilities.
Existing AT&T facilities will be retired in place as indicated on my relocation drawings
- D. Describe the details of the proposed new facilities.
See Relocation drawings
- E. Describe the proposed location of the new facilities.
See relocation drawings
- F. By signing here, the Utility has determined to the best of their ability that they have facilities within the project area and the facilities are not in conflict with the project based upon the plans received on **<Enter Date Received Plans>**

Signature of Utility Representative

Print Name

Date

Note: A signature by the utility representative at item "(F)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct.

Section 3: A statement whether the facility relocation is or is not dependent on the acquisition of additional



Brian Cravens
240 N Meridian St. 2nd Floor
Indianapolis, IN 46204

T: 317.610-5424
C: 317.796.5793
Bc3785@att.com
www.att.com

property interests with a description of that work. [IAC 13-3-3(c) (2) (B)]

All proposed ROW will need to be finalized and cleared prior to AT&T beginning construction.

Section 4: A statement whether the utility is or is not willing to allow the INDOT contractor to do the required work as part of the highway contract. [IAC 13-3-3(c) (3)]

AT&T will utilize our approved contractors

Section 5: From the date the work plan is approved by both parties; please provide the Utility's pre-construction scheduling information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A.	The expected lead time in calendar days to obtain required permits:	21
B.	The expected lead time in calendar days to obtain materials:	21
C.	The expected lead time in calendar days to schedule work crews:	30
D.	If the contractor is being selected by competitive bid what is the date of selection?	TBD
E.	The expected lead time in calendar days to obtain new property interests:	NA
F.	The earliest date when the utility could begin to implement the pre-construction activities of the work plan:	30 days from NTP
G.	The total number of calendar days for pre-construction activities: (accounting for concurrent activities)	30

Section 6: The Utility Construction Scheduling Information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]



- A. A statement whether the facility relocation is or is not dependent on work to be done by another utility with a description of that work. [IAC 13-3-3(c)(2)(A)(i)]
1. Utility A, with a description of the required work.
NA
 2. Utility B, with a description of the required work.
NA
 3. Utility C, with a description of the required work.
NA
- B. A statement whether the facility relocation is or is not dependent on work to be done by the department or the department's contractor with a description of that work. [IAC 13-3-3(c)(2)(A)(ii)]
1. Work item A
ROW acquisition and clearing will need to be completed
 2. Work item B
ROW staking, to include elevation stakes will need to be completed
 3. Work item C
- C. How many calendar days after the events identified in Sec 6 A and B are completed can the utility begin construction: 14
- D. The number of calendar days to complete the relocation work: 60



Brian Cravens
240 N Meridian St. 2nd Floor
Indianapolis, IN 46204

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Bc3785@att.com
www.att.com

Section 7: A drawing of sufficient detail with station, offset, elevations, and scale to show the proposed location of the facility relocation, which takes precedence over the narrative description of the work, needs to be on INDOT Construction drawings. [IAC 13-3-3(c) (6)]. Plans must be attached to this Work Plan Document.

Included

Section 8: For each work plan the utility shall include a cost estimate for the facility relocation. For reimbursable work the estimate will identify betterment and salvage which is not reimbursable. [IAC 13-3-3(d)]

NA

Section 9: For work the utility is entitled to be compensated by the Department, the work plan shall include documentation of property interests and compensable land rights. [IAC 13-3-3(d)]

NA

Section 10: The implementation of this approved work plan is dependent upon the issuance of: (a notice to proceed will be provided when items in Section 6 are accomplished)

Items Completed	Yes	Not Applicable
An executed reimbursement agreement with INDOT/LPA:	<input type="checkbox"/>	<input type="checkbox"/>
A relocation permit from INDOT/LPA:	<input type="checkbox"/>	<input type="checkbox"/>

(Note: Double-click on box in Yes or NA to mark it with an "X")

Submitter Signature

09-06-2016

Date

Brian Cravens

Submitter Name Printed

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point



Brian Cravens
240 N Meridian St. 2nd Floor
Indianapolis, IN 46204

T: 317.610-5424
C: 317.796.5793
Bc3785@att.com
www.att.com

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

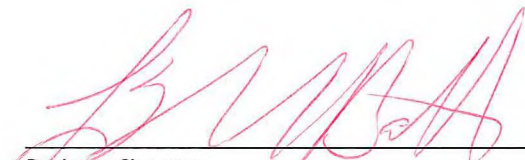
The following sections are to be used by INDOT personnel to review the utility relocation work plan.

Section 11: The Department shall review the work plan to ensure that it: [IAC 13-3-3(e)]

Description	Yes	No	Initials
(1.a) is compatible with department permit requirements	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2MB
(1.b) is compatible with the project plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2MB
(1.c) is compatible with the construction schedule	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2MB
(1.d) is compatible with other utility relocation work plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2MB
(2.a) has reasonable relocation scheme	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2MB
(2.b) has a reasonable cost for compensable work	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2MB

(Note: Double-click on box under Yes or No to mark it with an "X")


Comments on any sections (1.a – 2.b) that were marked No:



Reviewer Signature

9/6/15

Date



Reviewer Name Printed

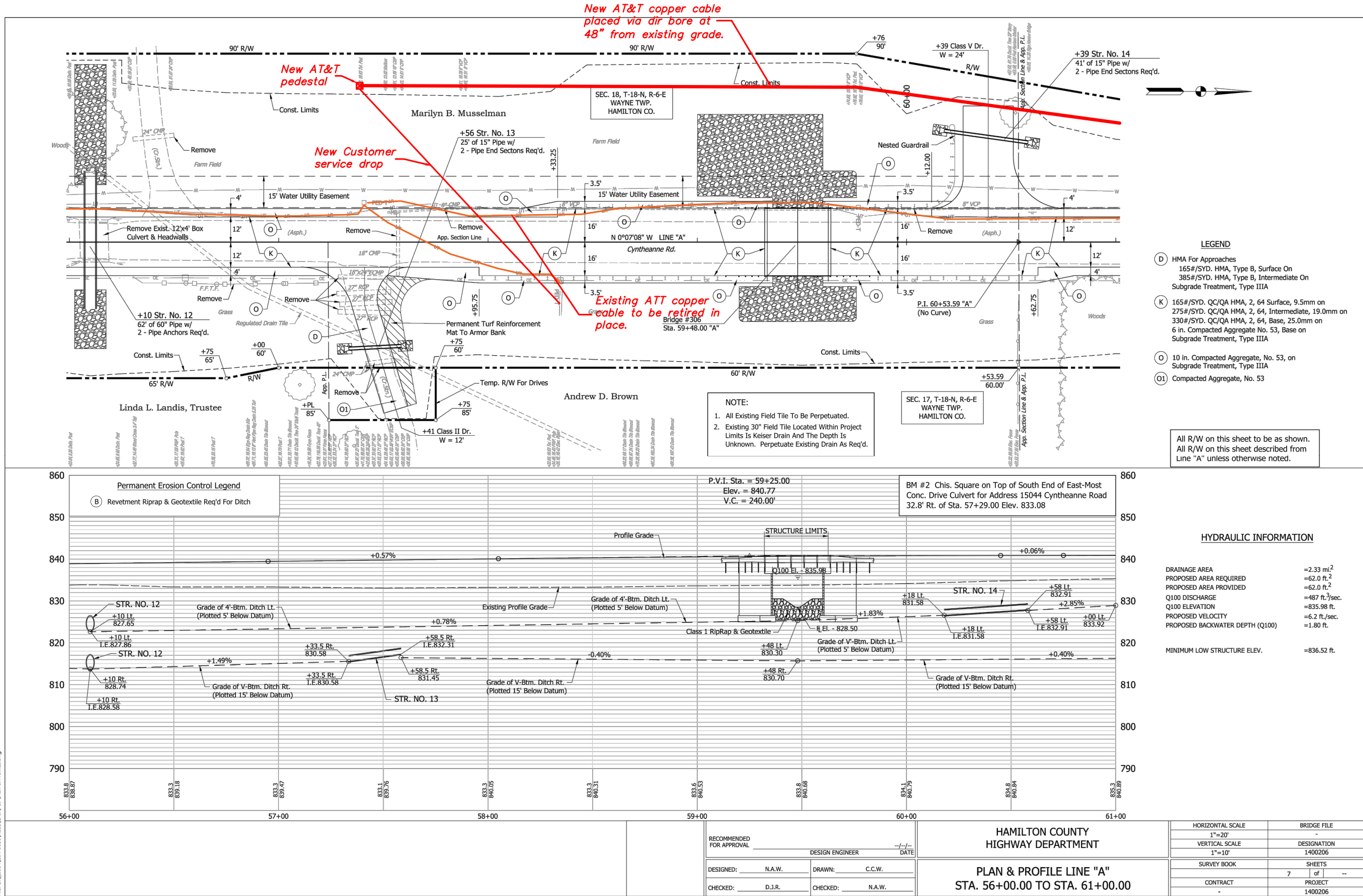
Section 12: Approved Work Plan. [IAC 13-3-3(f)]

I have reviewed the work plan and found it acceptable.

Project Manager Signature

Date

Project Manager Name Printed



Date: Apr 07, 2016 4:17pm User Name: Chris
File: S:_2014\12-14-03\Road\CD\Plan & Profiles.dwg



Date: 11-23-16

Subject:

Utility Relocation Work Plan for:	Citizens Southern Madison
Facility Type:	water

Section 1: General Information

A. INDOT/LPA Project Information

1. HCHD Project No.:	PB-14-0004
2. Route Number:	Cyntheanne Road
3. Location:	0.42 Mile North of 146 th Street
4. Work Type:	Small Structure Replacement
5. Letting Date:	2/27/17
6. Date Work Plan Needed	7/1/16
7. Target Date for Utility to be out of conflict with County Project	1/1/17
Intermediate Phase	N/A
Intermediate Phase	N/A

B. Utility Designated Contact – Information

1. Designated Contact Name:	Chris Brumfield
2. Office telephone:	317-263-6382
3. Mobile telephone:	317-695-0978
4. Email address:	cbrumfield@citizensenergygroup.com
5. Agency name	Citizens Energy Group
6. Address:	2150 Dr. Martin Luther King Jr St.
7. City, State, Zip Code:	Indianapolis, IN, 46202
8. Construction Emergency Contact:	
Name:	Jayson Watt
Number:	317-263-6422

- C. By signing here, the Utility has determined to the best of their ability that they do not have facilities within the project area:

Signature of Utility Representative

Print Name

Date

Note: A signature by the utility representative at item "(C)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct

D. INDOT/LPA Utility Coordinator Contact Information

1.	Utility Coordinator Name:	Nick Batta
2.	Office Telephone:	317-334-6820
3.	Mobile Telephone:	317-409-0665
4.	Email Address:	NBatta@lochgroup.com
5.	Agency Name:	Lochmueller Group
6.	Address:	3502 Woodview Trace, Suite 150
7.	City, State, Zip Code	Indianapolis, IN 46268

CARL CAMACHO
ccamacho@lochgroup.com

Section 2: A narrative description of the facility relocation that will be required. [IAC 13-3-3(c)]

- A. Describe what types of existing active and inactive facilities are present.
16" PVC and HDPE water main, valves, hydrants, and fittings
- B. Describe the location of existing active and inactive facilities.
Water mains are located in existing easements starting on the east side of the centerline of Cyntheanne Rd. outside of the Right of way continuing north until approx. Sta. 51 + 57, then turns 90 degrees and crosses the road to a point 25' west of the centerline and continues north throughout the rest of the project between 25' and 31' west of the centerline in existing easements.
- C. Describe what will be done with existing active and inactive facilities.
The existing main will need to be relocated due to additional fill or grade cut and abandoned in place and grout filled once the relocations are complete.
- D. Describe the details of the proposed new facilities.
New 16" Ductile Iron pipe with fittings
- E. Describe the proposed location of the new facilities.
The new 16" Ductile Iron pipe to be installed will start at approx. Sta. 54+00 and continue north to approx. Sta. 61+00 in the new Right of Way ranging from 40' to 50' west of the centerline of Cyntheanne Rd. with connections on both ends to existing main. Water main to be lowered at Sta. 64+25 thru 65+25 to allow grade cut.

By signing here, the Utility has determined to the best of their ability that they have facilities within the project area and the facilities are not in conflict with the project based upon the plans received on <Enter Date Received Plans>

Signature of Utility Representative

Print Name

Date

Note: A signature by the utility representative at item "(F)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct.



Section 3: A statement whether the facility relocation is or is not dependent on the acquisition of additional property interests with a description of that work. [IAC 13-3-3(c) (2) (B)]

Citizens work is dependent on the proposed Right of way and clearing for relocations to proceed.

Section 4: A statement whether the utility is or is not willing to allow the INDOT contractor to do the required work as part of the highway contract. [IAC 13-3-3(c) (3)]

Citizens is not willing to allow the INDOT contractor to install proposed water facilities.

Section 5: From the date the work plan is approved by both parties; please provide the Utility's pre-construction scheduling information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A.	The expected lead time in calendar days to obtain required permits:	15
B.	The expected lead time in calendar days to obtain materials:	60
C.	The expected lead time in calendar days to schedule work crews:	30
D.	If the contractor is being selected by competitive bid what is the date of selection?	N/A
E.	The expected lead time in calendar days to obtain new property interests:	N/A
F.	The earliest date when the utility could begin to implement the pre-construction activities of the work plan:	12-1-16
G.	The total number of calendar days for pre-construction activities: (accounting for concurrent activities)	15 days

Section 6: The Utility Construction Scheduling Information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A. A statement whether the facility relocation is or is not dependent on work to be done by another utility with a description of that work. [IAC 13-3-3(c)(2)(A)(i)]

1. Utility A, with a description of the required work.
No work is dependent on another utility.
2. Utility B, with a description of the required work.
3. Utility C, with a description of the required work.

B. A statement whether the facility relocation is or is not dependent on work to be done by the department or the department's contractor with a description of that work. [IAC 13-3-3(c)(2)(A)(ii)]

1. Work item A
Site will need to be cleared of existing trees and fence.
2. Work item B
3. Work item C

C. How many calendar days after the events identified in Sec 6 A and B are completed can the utility begin construction: 15 days

D. The number of calendar days to complete the relocation work: 45 Days

Section 7: A drawing of sufficient detail with station, offset, elevations, and scale to show the proposed location of the facility relocation, which takes precedence over the narrative description of the work, needs to be on INDOT Construction drawings. [IAC 13-3-3(c) (6)]. Plans must be attached to this Work Plan Document.

Attached

Section 8: For each work plan the utility shall include a cost estimate for the facility relocation. For reimbursable work the estimate will identify betterment and salvage which is not reimbursable. [IAC 13-3-3(d)]

Attached - total of \$188,753.66

Section 9: For work the utility is entitled to be compensated by the Department, the work plan shall include documentation of property interests and compensable land rights. [IAC 13-3-3(d)]

attached.

Section 10: The implementation of this approved work plan is dependent upon the issuance of: (a notice to proceed will be provided when items in Section 6 are accomplished)

Items Completed	Yes	Not Applicable
An executed reimbursement agreement with INDOT/LPA:	<input type="checkbox"/>	<input type="checkbox"/>
A relocation permit from INDOT/LPA:	<input type="checkbox"/>	<input type="checkbox"/>

(Note: Double-click on box in Yes or NA to mark it with an "X")



Submitter Signature

11-23-16

Date

Christopher M. Brumfield

Submitter Name Printed

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

The following sections are to be used by INDOT personnel to review the utility relocation work plan.




Section 11: The Department shall review the work plan to ensure that it: [IAC 13-3-3(e)]

Description	Yes	No	Initials
(1.a) is compatible with department permit requirements	<input checked="" type="checkbox"/>	<input type="checkbox"/>	CDC
(1.b) is compatible with the project plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	CDC
(1.c) is compatible with the construction schedule	<input checked="" type="checkbox"/>	<input type="checkbox"/>	CDC
(1.d) is compatible with other utility relocation work plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	CDC
(2.a) has reasonable relocation scheme	<input checked="" type="checkbox"/>	<input type="checkbox"/>	CDC
(2.b) has a reasonable cost for compensable work	<input checked="" type="checkbox"/>	<input type="checkbox"/>	CDC

(Note: Double-click on box under Yes or No to mark it with an "X")

Comments on any sections (1.a – 2.b) that were marked No:



Reviewer Signature

11/29/2016

Date

CARL D. CAMACHO

Reviewer Name Printed

Section 12: Approved Work Plan. [IAC 13-3-3(f)]

I have reviewed the work plan and found it acceptable.



Project Manager Signature

11/29/2016

Date

CARL D. CAMACHO

Project Manager Name Printed



Subject: Project Name Cyntheanne Rd. water main relocations
Project Number 47RE02226

Dear: Faraz J. Khan

Citizens Energy Group hereby proposes to relocate the existing 16" water main to allow for the proper clearance between the proposed storm pipes and additional fill material as part of the proposed Hamilton County road and bridge project. This work will include the relocations of the water main for a price of One hundred eighty eight thousand seven hundred fifty three and sixty six (\$188,753.66) Dollars.

The price includes the following:

CEG	\$ 10,758.78
Materials	\$ 56,976.61
Contingency	\$ 8,988.27
Others*	\$ 112,030.00
Grand Total	\$ 188,753.66

*Others include sub-contractor labor, concrete for kicker blocks, permits, flushing, traffic control, etc.

Since the cost of this work is the responsibility of the Customer, please submit a reimbursable agreement to **Citizens Energy Group** for the amount of \$188,753.66. This must be received prior to the release of this job. Once the agreement is received, this job will be forwarded to our **Construction** Department. Please send the aforementioned reimbursable agreement to:

Ted Foxworthy
Property Records
Citizens Water
2020 North Meridian Street
Indianapolis, IN 46202

If there are any questions please call my office at 263-6382.

Sincerely,
Citizens Westfield

Chris Brumfield
Title: Engineering Specialist

ACCEPTANCE OF AGREEMENT

By: _____

(Name)

(Title)

Note: The cost quoted and work described is subject to review and possible cost adjustment if not accepted within 45 days.

nne Rd. over Frank Keiser Drain Water Main relocations PROJECT # 47RE02226



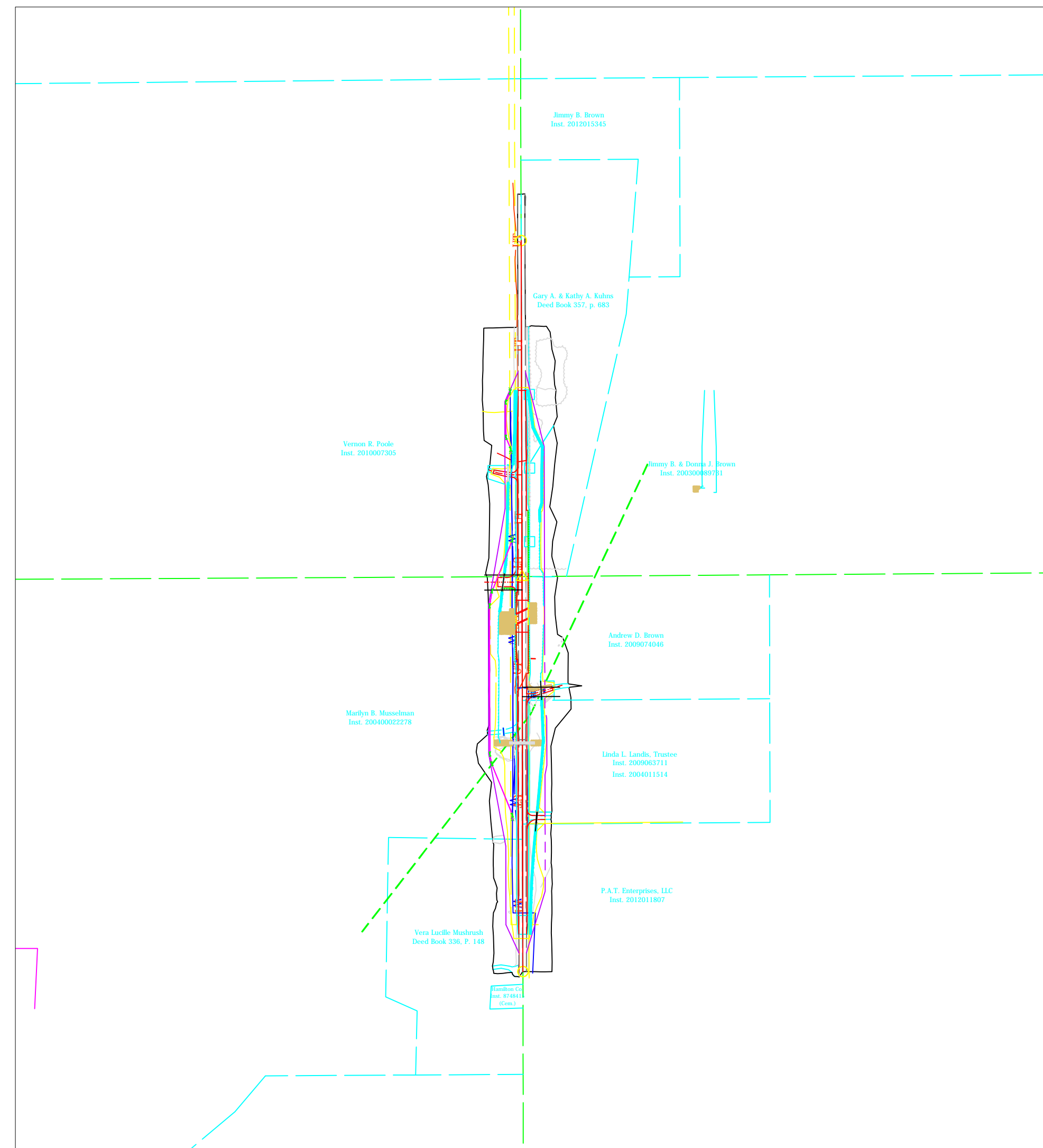
2150 DR. MARTIN LUTHER KING JR STREET
INDIANAPOLIS, IN 46202
WWW.CITIZENSENERGYGROUP.COM
(317) 639-1501

CITIZENS PROJECT CONTACT INFORMATION

Design Manager Jessica Bastin 317-927-4596
jbastin@citizensenergygroup.com

Engineering Specialist Chris Brumfield 317-263-6382
cbrumfield@citizensenergygroup.com

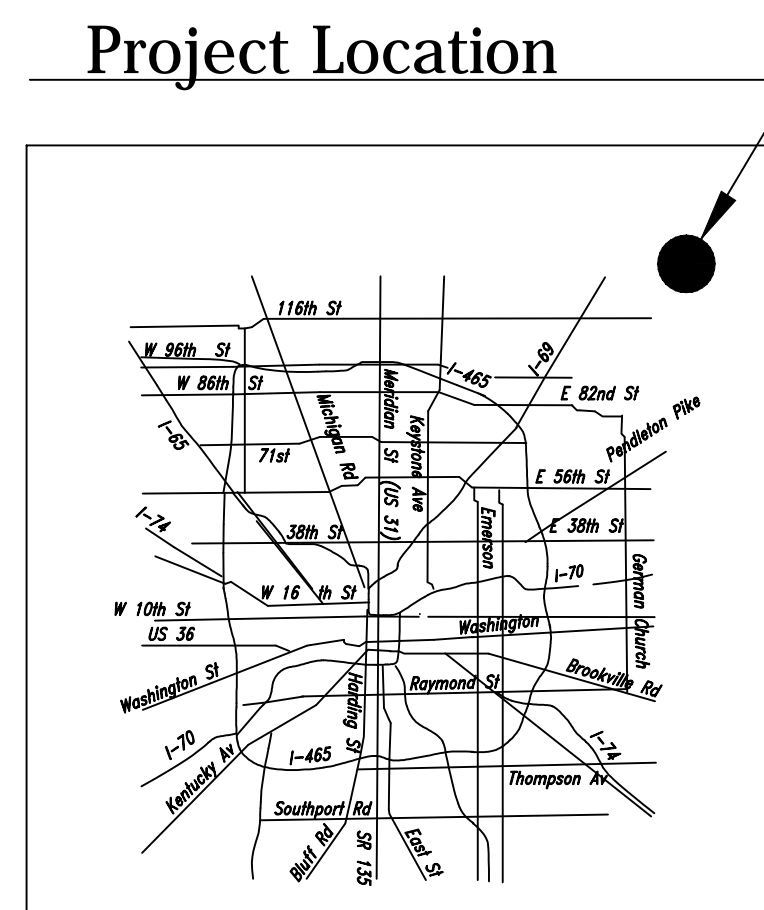
Construction Manager Mike Miller 317-429-3565
mmiller2@citizensenergygroup.com



PROJECT LOCATION MAP
NOT TO SCALE

GENERAL NOTES:

1. FOLLOW CITIZENS WATER STANDARDS MANUAL PER CITIZENSWATER.COM
2. CONTRACTOR IS RESPONSIBLE FOR LOCATES 2 DAYS PRIOR TO DIGGING.
3. CONTRACTOR IS RESPONSIBLE FOR FOLLOWING LOCAL AGENCY TRAFFIC CONTROL REQUIREMENTS.

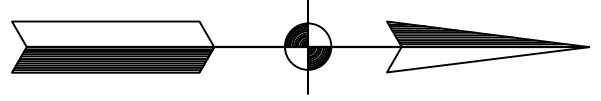
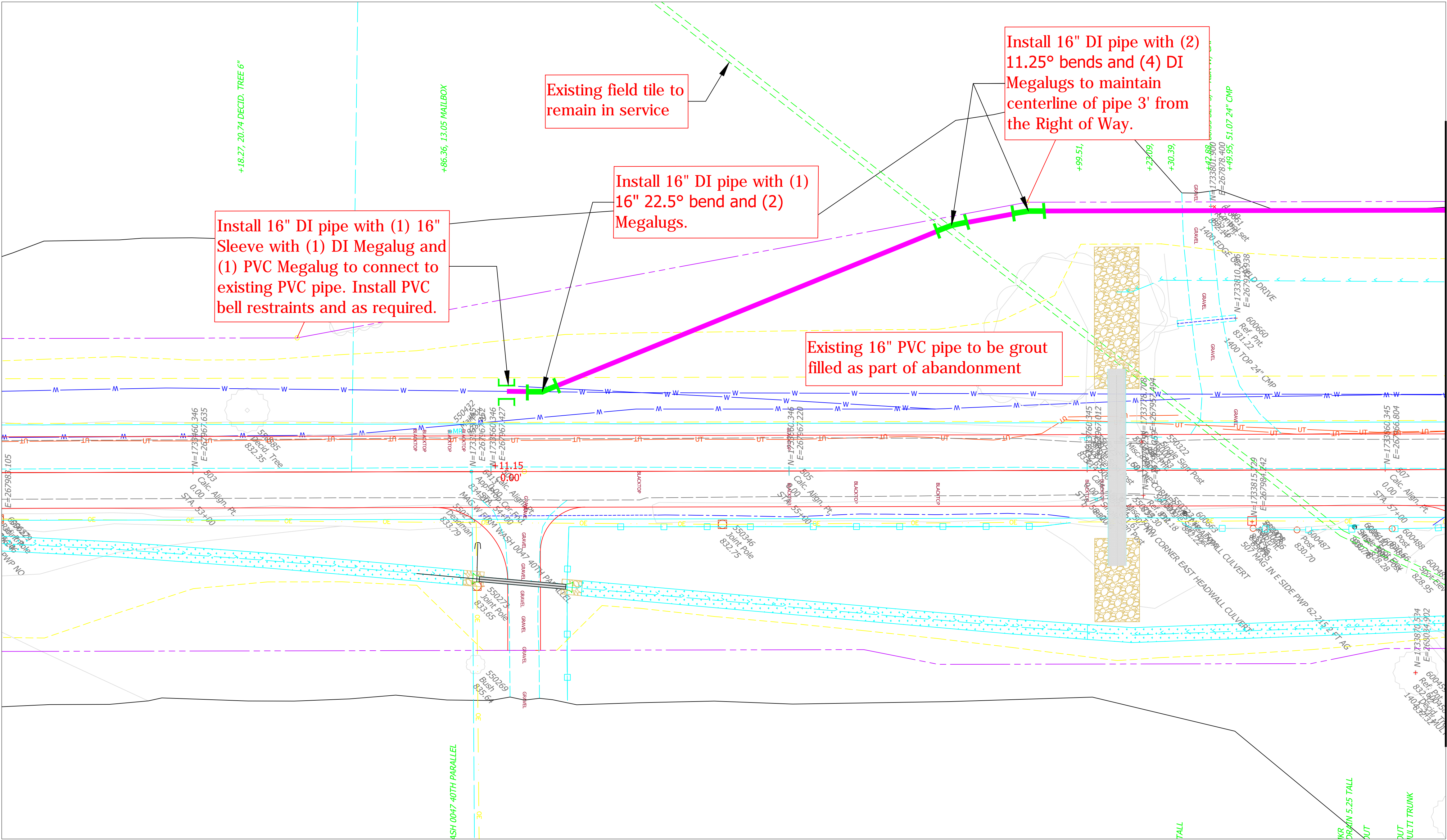


GENERAL LOCATION MAP
NOT TO SCALE

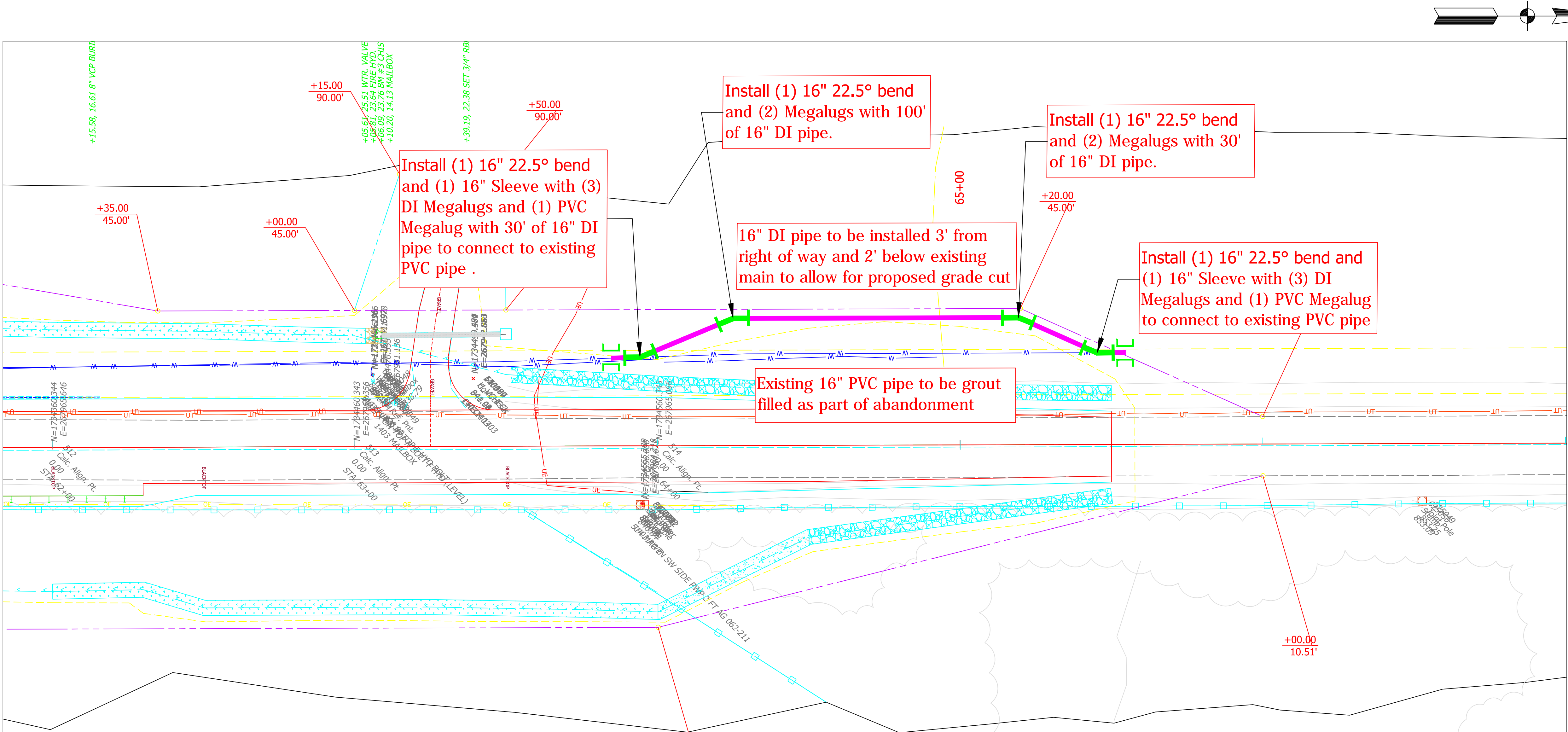
SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PLAN SHEET
3	PLAN SHEET
4	PLAN SHEET



				*	
				*	
				*	
				*	
SHEET NUMBER					
1					
1	of	4			



Cyntheanne Rd. over Frank Keiser Drain				Chris Brumfield	
Distribution Map 2348	Pressure District *	Meter MAP *	Tax Code *	Chris Brumfield	
Drawn By	Project Manager			Chris Brumfield	
Scale: 1" = 20'				Project No.: 47RE02226	
Date: 2/2/2016				SHEET NUMBER	
2				2 of 4	
citizens energy group				Indiana 811	
CITYTENS WATER				Know what's below. Call before you dig.	
2150 DR. CYNTHIANNE RD. INDIANAPOLIS, IN 46202				REVISIONS	
(317) 689-1501				DATE	
				BY	



			*		REVISIONS
			*		DATE





CITIZENS WATER

2150 DRUMMOND STREET
INDIANAPOLIS, IN 46202
(317) 689-1501

Cyntheanne Rd. over Frank Keiser Drain			
Distribution Map 2348	Pressure District *	Meter MAP *	Tax Code *
Drawn By Chris Brumfield	Project Manager Chris Brumfield		

Scale: 1" = 20'

Project No.: 47RE02226

Date: 7/28/2016

SHEET NUMBER
4
4 of 4



5330 East 65th Street | Indianapolis, IN 46220 | 800-391-3000

Date: 06/07/16

Subject:

Utility Relocation Work Plan for:	Comcast
Facility Type:	CATV/Telecommunications

Section 1: General Information

A. INDOT/LPA Project Information

1. HCHD Project No.:	PB-14-0004
2. Route Number:	Cyntheanne Road
3. Location:	0.42 Mile North of 146 th Street
4. Work Type:	Small Structure Replacement
5. Letting Date:	2/27/17
6. Date Work Plan Needed	7/1/16
7. Target Date for Utility to be out of conflict with County Project	1/1/17
Intermediate Phase	N/A
Intermediate Phase	N/A

B. Utility Designated Contact – Information

1.	Designated Contact Name:	Thomas Spencer
2.	Office telephone:	NA
3.	Mobile telephone:	(317) 752-9426
4.	Email address:	tspencer@telecomplacement.com
5.	Agency name	Comcast
6.	Address:	5330 East 65 th Street
7.	City, State, Zip Code:	Indianapolis, IN 46220
8.	Construction Emergency Contact:	
	Name:	Enter Contact Name
	Number:	For routine questions during regular business hours, please contact Thomas Spencer, section 1B; for emergency issues such as damaged facilities, contact 1-800-2278 (1-800-COMCAST)

C. By signing here, the Utility has determined to the best of their ability that they do not have facilities within the project area:

Signature of Utility Representative

Print Name

Date

Note: A signature by the utility representative at item “(C)” fulfills the requirement to complete the rest of this form and affirms their contact information above is correct



5330 East 65th Street | Indianapolis, IN 46220 | 800-391-3000

D. INDOT/LPA Utility Coordinator Contact Information

1.	Utility Coordinator Name:	Nick Batta
2.	Office Telephone:	317-334-6820
3.	Mobile Telephone:	317-409-0665
4.	Email Address:	NBatta@lochgroup.com
5.	Agency Name:	Lochmueller Group
6.	Address:	3502 Woodview Trace, Suite 150
7.	City, State, Zip Code	Indianapolis, IN 46268

Section 2: A narrative description of the facility relocation that will be required. [IAC 13-3-3(c)]

- A. Describe what types of existing active and inactive facilities are present.
Comcast facilities consist of aerial fiber optic cable with associated support structure.
- B. Describe the location of existing active and inactive facilities.
Facilities are attached to existing utility poles located within the public ROW along the east side of Cynthianne Rd. these poles are owned by others.
- C. Describe what will be done with existing active and inactive facilities.
Facilities will be relocated to new poles. These poles will be placed by others.
- D. Describe the details of the proposed new facilities.
Facilities will be in kind with existing facilities.
- E. Describe the proposed location of the new facilities.
Facilities will be located on new poles placed by others. According to the pole owner's relocate plan, these poles are to be located at the back of the new ROW, along the east side of Cynthianne Rd.
- F. By signing here, the Utility has determined to the best of their ability that they have facilities within the project area and the facilities are not in conflict with the project based upon the plans received on <Enter Date Received Plans>

Signature of Utility Representative

Print Name

Date

Note: A signature by the utility representative at item "(F)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct.



5330 East 65th Street | Indianapolis, IN 46220 | 800-391-3000

Section 3: A statement whether the facility relocation is or is not dependent on the acquisition of additional property interests with a description of that work. [IAC 13-3-3(c) (2) (B)]

Comcast requires no new additional property interests beyond that shown on the Construction Drawings.

Section 4: A statement whether the utility is or is not willing to allow the INDOT contractor to do the required work as part of the highway contract. [IAC 13-3-3(c) (3)]

Comcast IS NOT willing to allow INDOT, Hamilton County, or its contractor(s) to perform this relocation.

Section 5: From the date the work plan is approved by both parties; please provide the Utility's pre-construction scheduling information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A.	The expected lead time in calendar days to obtain required permits:	INDOT shall provide Comcast with a written Notice to Proceed and all required permits prior to Comcast beginning any relocation activity.
B.	The expected lead time in calendar days to obtain materials:	30
C.	The expected lead time in calendar days to schedule work crews:	14
D.	If the contractor is being selected by competitive bid what is the date of selection?	NA
E.	The expected lead time in calendar days to obtain new property interests:	0
F.	The earliest date when the utility could begin to implement the pre-construction activities of the work plan:	10/01/16
G.	The total number of calendar days for pre-construction activities: (accounting for concurrent activities)	30

Section 6: The Utility Construction Scheduling Information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

- A. A statement whether the facility relocation is or is not dependent on work to be done by another utility with a description of that work. [IAC 13-3-3(c)(2)(A)(i)]
- Utility A, with a description of the required work.
Duke Energy must complete its relocation, completely remove its facilities from the exiting poles, top the existing poles. On completion of Duke's relocation, Duke must notify Contact listed in Section 1-B by email prior to Comcast beginning any relocation activity.
 - Utility B, with a description of the required work.
NA
 - Utility C, with a description of the required work.
NA



5330 East 65th Street | Indianapolis, IN 46220 | 800-391-3000

- B. A statement whether the facility relocation is or is not dependent on work to be done by the department or the department's contractor with a description of that work. [IAC 13-3- 3(c)(2)(A)(ii)]

Hamilton County in place of INDOT in this section.

1. Work item A
INDOT and its contractor(s) must maintain the ROW to be in a drivable condition to allow Comcast and its contractor(s) vehicular access to the utility poles.
2. Work item B
INDOT or its contractor(s) must stake the ROW and maintain the staking for the duration of Comcast's relocation activities. This staking must include final grade information.
3. Work item C
4. **INDOT and its contractor(s) must maintain the ROW free from obstructions, including but not limited to:, excavations, spoil piles, machinery, material storage and debris.**

- C. How many calendar days after the events identified in Sec 6 A and B are completed can the utility begin construction: 14 after written notification.

- D. The number of calendar days to complete the relocation work: 30

Section 7: A drawing of sufficient detail with station, offset, elevations, and scale to show the proposed location of the facility relocation, which takes precedence over the narrative description of the work, needs to be on INDOT Construction drawings. [IAC 13-3-3(c) (6)]. Plans must be attached to this Work Plan Document.

Comcast will attach to the poles indicated in the preliminary Duke Energy relocation plan.

Section 8: For each work plan the utility shall include a cost estimate for the facility relocation. For reimbursable work the estimate will identify betterment and salvage which is not reimbursable. [IAC 13-3-3(d)]

NA

Section 9: For work the utility is entitled to be compensated by the Department, the work plan shall include documentation of property interests and compensable land rights. [IAC 13-3-3(d)]

NA



5330 East 65th Street | Indianapolis, IN 46220 | 800-391-3000

Section 10: The implementation of this approved work plan is dependent upon the issuance of: (a notice to proceed will be provided when items in Section 6 are accomplished)

Items Completed	Yes	Not Applicable
An executed reimbursement agreement with INDOT/LPA:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
A relocation permit from INDOT/LPA:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(Note: Double-click on box in Yes or NA to mark it with an "X")

TSpencer
Submitter Signature

06/08/16
Date

Thomas Spencer
Submitter Name Printed



5330 East 65th Street | Indianapolis, IN 46220 | 800-391-3000

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

The following sections are to be used by INDOT personnel to review the utility relocation work plan.

Section 11: The Department shall review the work plan to ensure that it: [IAC 13-3-3(c)]

Description	Yes	No	Initials
(1.a) is compatible with department permit requirements	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AMS
(1.b) is compatible with the project plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AMS
(1.c) is compatible with the construction schedule	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AMS
(1.d) is compatible with other utility relocation work plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AMS
(2.a) has reasonable relocation scheme	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AMS
(2.b) has a reasonable cost for compensable work	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AMS

(Note: Double-click on box under Yes or No to mark it with an "X")

Comments on any sections (1.a – 2.b) that were marked No:



Reviewer Signature

8/8/16
Date

Nick Batta
Reviewer Name Printed

Section 12: Approved Work Plan. [IAC 13-3-3(f)]

I have reviewed the work plan and found it acceptable.


Project Manager Signature

August 9, 2016
Date



5330 East 65th Street | Indianapolis, IN 46220 | 800-391-3000

Faraz Khan

Project Manager Name Printed



Date: **July 6th, 2016**

Subject:

Utility Relocation Work Plan for:	Duke Energy
Facility Type:	Electric

Section 1: General Information

A. INDOT/LPA Project Information

1. DES NO.:	N/A
2. Route Number:	Cyntheanne Road
3. Location:	Over Keiser Ditch, about 0.3 miles north of 146 th street
4. Work Type:	Bridge and Culvert Replacements
5. Letting Date:	December 1, 2016
6. Date Work Plan Needed	July 1, 2016
7. Target Date for Utility to be out of conflict with INDOT Project	Winter 2016
Intermediate Phase	N/A
Intermediate Phase	N/A

B. Utility Designated Contact – Information

1. Designated Contact Name:	Brynn Streeter
2. Office telephone:	317-776-5351
3. Mobile telephone:	317-703-0681
4. Email address:	Brynn.streeter@duke-energy.com
5. Agency name	Duke Energy
6. Address:	100 S. Mill Creek Road
7. City, State, Zip Code:	Noblesville, IN 46062
8. Construction Emergency Contact:	
Name:	Brynn Streeter
Number:	317-703-0681

**** For Outage and Damage Issues please contact 1-800-521-2232 ****

- C. By signing here, the Utility has determined to the best of their ability that they do not have facilities within the project area:

Signature of Utility Representative

Print Name

Date



Note: A signature by the utility representative at item “(C)” fulfills the requirement to complete the rest of this form and affirms their contact information above is correct

D. INDOT/LPA Utility Coordinator Contact Information

1.	Utility Coordinator Name:	Nick Batta, P.E.
2.	Office Telephone:	317.222.3880
3.	Mobile Telephone:	N/A
4.	Email Address:	nbatta@lochgroup.com
5.	Agency Name:	Lochmueller Group
6.	Address:	3502 Woodview Trace Suite 150
7.	City, State, Zip Code	Indianapolis, IN 46268

Section 2: A narrative description of the facility relocation that will be required. [IAC 13-3-3(c)]

A. Describe what types of existing active and inactive facilities are present.

An existing 2-Phase 12kv line along the east side of Cynthianne Road through the project limits. An existing 1-Phase underground line near station 58+35 east to feed customer. An existing 1-Phase overhead line near station 54+75 east to feed customer. An existing underground secondary line crossing Cynthianne west near station 64+50 to feed customer.

Duke Energy is unable to confirm whether or not there are any underground, inactive Duke Energy facilities present. Regardless, any such inactive facilities should be considered abandoned in place, and therefore, subject to neither removal nor preservation by Duke Energy.

B. Describe the location of existing active and inactive facilities.

An existing 2-Phase 12kv line along the east side of Cynthianne Road through the project limits. An existing 1-Phase underground line near station 58+35 east to feed customer. An existing 1-Phase overhead line near station 54+75 east to feed customer. An existing underground secondary line crossing Cynthianne west near station 64+50 to feed customer.

Duke Energy is unable to confirm whether or not there are any underground, inactive Duke Energy facilities present. Regardless, any such inactive facilities should be considered abandoned in place, and therefore, subject to neither removal nor preservation by Duke Energy.

C. Describe what will be done with existing active and inactive facilities.

The existing 2-phase overhead pole line will be relocated east to the proposed right-of-way. The underground secondary crossing will be relocated.

Duke Energy is unable to confirm whether or not there are any underground, inactive Duke Energy facilities present. Regardless, any such inactive facilities should be considered abandoned in place, and therefore, subject to neither removal nor preservation by Duke Energy.

PLEASE REFER TO THE OSHA WEBSITE FOR ALL CLEARANCE REQUIREMENTS BASED ON THE VOLTAGE OF OUR LINES LISTED ABOVE.

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=19

WARNING: ANY ORANGE OR YELLOW COVER-UP THAT DUKE ENERGY WOULD PLACE ON THE DISTRIBUTION LINE WOULD BE FOR VISUAL IDENTIFICATION ONLY AND WILL NOT PROTECT AGAINST THE TRAVEL OF ELECTRICITY, THEREFORE ALL WIRES WOULD BE CONSIDERED BARE, UNINSULATED, AND ENERGIZED AT ALL TIMES.



IF THE CONTRACTOR WOULD LIKE VISUAL COVER INSTALLED ON THE DISTRIBUTION WIRES, THEY WILL NEED TO CONTACT THE DUKE ENERGY CALL CENTER FOR SCHEDULING AT 1.800.521.2232, MONDAY THROUGH FRIDAY FROM 7A TO 7P OR ON SATURDAY FROM 8A TO 1P.

- D. Describe the details of the proposed new facilities.

The relocated 12kv 2-phase overhead pole line will be installed within 1' of the proposed right of way along the east side of Cyntheanne Road. A new 12kv 1-phase tap will be installed east to continue to feed customer near station 54+75. A new 12kv 1-phase underground line will be installed near station 59+00 and be installed approximately 40" deep and 3' west of the proposed right of way line. A new secondary underground crossing near station 64+50 . Please see Duke Energy drawings dated July 6, 2016.

- E. Describe the proposed location of the new facilities.

The relocated 12kv 2-phase overhead pole line will be installed within 1' of the proposed right of way along the east side of Cyntheanne Road. A new 12kv 1-phase tap will be installed east to continue to feed customer near station 54+75. A new 12kv 1-phase underground line will be installed near station 59+00 and be installed approximately 40" deep and 3' west of the proposed right of way line. A new secondary underground crossing near station 64+50 . Please see Duke Energy drawings dated July 6, 2016.

- F. By signing here, the Utility has determined to the best of their ability that they have facilities within the project area and the facilities are not in conflict with the project based upon the plans received on

Signature of Utility Representative

Print Name

Date

Note: A signature by the utility representative at item "(F)" fulfills the requirement to complete the rest of this form and affirms their contact information above is correct.



Section 3: A statement whether the facility relocation is or is not dependent on the acquisition of additional property interests with a description of that work. [IAC 13-3-3(c) (2) (B)]

- (A) Duke Energy must have acquired all ROW, RR, State or Federal permits before relocation construction begins.**
- (B) Duke Energy must have acquired all private “possessory rights” needed for the approved relocation plan before relocation construction begins.**
- (C) Duke Energy will not be acquiring easements for the said project.**

Section 4: A statement whether the utility is or is not willing to allow the INDOT contractor to do the required work as part of the highway contract. [IAC 13-3-3(c) (3)]

Duke Energy Indiana is not willing to have a INDOT OR LPA’s contractor perform the required relocation.

Section 5: From the date the work plan is approved by both parties; please provide the Utility’s pre-construction scheduling information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

A.	The expected lead time in calendar days to obtain required permits:	60 Days
B.	The expected lead time in calendar days to obtain materials:	60 Days
C.	The expected lead time in calendar days to schedule work crews:	60 Days (Minimum)
D.	If the contractor is being selected by competitive bid what is the date of selection?	Not Applicable
E.	The expected lead time in calendar days to obtain new property interests:	Hamilton County Highway Department to obtain all ROW
F.	The earliest date when the utility could begin to implement the pre-construction activities of the work plan:	Once the Work Plan has been Approved and Received
G.	The total number of calendar days for pre-construction activities: (accounting for concurrent activities)	60 Days

Section 6: The Utility Construction Scheduling Information. [IAC 13-3-3(c) (4), IAC 13-3-3(c) (5)]

- A. A statement whether the facility relocation is or is not dependent on work to be done by another utility with a description of that work. [IAC 13-3-3(c)(2)(A)(i)]
- The removal of Duke Energy's pole(s) is dependent upon the removal of attachers to our poles. The attachers must remove their facilities before the existing poles can be removed. The existing attachers to our poles on this project are:**

- (1) TELE, with a description of the required work:**
Contact all the onsite utilities for their proposed relocation plans
- (2) CATV, with a description of the required work:**
Contact all the onsite utilities for their proposed relocation plans
- (3) FIBER(S), with a description of the required work:**
Contact all the onsite utilities for their proposed relocation plans



If the existing attacher is transferring their facilities to our new poles, the existing attacher's construction schedule may begin only after Duke Energy's relocation construction is completed. Duke Energy has no control over the start date or finish date for attachers vacating our existing poles.

- B. A statement whether the facility relocation is or is not dependent on work to be done by the **INDOT or LPA** or the **INDOT or LPA'S** contractor with a description of that work. [IAC 13-3- 3(c)(2)(A)(ii)]

Work item A

INDOT or LPA will give written notice to Duke Energy that all "possessory rights" have been acquired for the entire length of the approved work plan area before relocation construction begins.

Work item B

INDOT OR LPA will work closely with Duke Energy to safely clear all trees, shrubs and structures, at the INDOT OR LPA's cost, for the entire length of the approved relocation plan area, including areas sufficiently beyond the construction limits to accommodate the approved relocation work plan before relocation construction begins.

Work item C

INDOT OR LPA will notify Duke Energy after staking (A or B):

A. INDOT OR LPA ROW limits every 200 ft with station identification before relocation construction begins. DUKE ENERGY WILL NEED THE R/W STAKED WITH EXISTING ELEVATIONS ALONG THE WEST AND EAST SIDE OF CYNTHEANNE ROAD THROUGH THE PROJECT LIMITS.

B. Station and offset identification provided by Duke Energy for each Duke Energy facility before location construction begins.

Work item D

INDOT OR LPA will provide signed copies of all reimbursement agreements before Relocation construction begins. NOT APPLICABLE

Work item E

INDOT OR LPA will provide Duke Energy a "Signed" work plan on or before as the ready for contracts date.

Work item F

INDOT OR LPA will provide Duke Energy a "Letter to Proceed" on or before the ready for contracts date but no event later than the required pre-construction lead time prescribed in Sections 5 F & G.

In the event that Duke Energy Indiana decides to hold, protect or guard its installed facilities before, after or during relocation construction, for the safe installation of another facility or utility, Duke Energy Indiana will notify the INDOT OR LPA immediately. Because time is of the essence, the INDOT OR LPA and Duke Energy Indiana agree to work together to minimize costs and delays for all parties involved, and Duke Energy Indiana agrees to not proceed until an agreement is reached with the INDOT OR LPA regarding reimbursement of Duke Energy Indiana's costs for holding protecting or guarding its facilities.



- C. How many calendar days after the events identified in Sec 6 A and B are completed can the utility begin construction:

Absent an agreement expediting the work between the INDOT OR LPA and Duke Energy Indiana, the earliest date when Duke Energy Indiana could begin construction.

- 1.) If the INDOT OR LPA ROW staking and clearing is contained in the INDOT OR LPA's construction contract, Duke Energy Indiana will begin construction within 60 days after Duke Energy Indiana has received from INDOT or LPA both a "Notice to Proceed" (confirming the staking and clearing has been completed) and a fully executed Work Plan.

If the INDOT OR LPA ROW staking and clearing is let as a separate contract, Duke Energy Indiana will begin construction within 60 days after Duke Energy Indiana has received from INDOT or LPA both a "Notice to Proceed" (confirming the staking and clearing has been completed) and a fully executed Work Plan.

If at any time within 120 days from the most current published letting date, the INDOT OR LPA changes the letting date by more than fourteen (14) days, Duke Energy Indiana reserves the right upon written notice sent by mail to the INDOT OR LPA, to provide to the INDOT OR LPA a revised work plan within 60 days from the date Duke Energy Indiana is notified of the change.

- D. The number of calendar days to complete the relocation work: **60 Days**

Section 7: A drawing of sufficient detail with station, offset, elevations, and scale to show the proposed location of the facility relocation, which takes precedence over the narrative description of the work. [IAC 13-3-3(c) (6)].

See Attachment A.

Section 8: For each work plan the utility shall include a cost estimate for the facility relocation. For reimbursable work the estimate will identify betterment and salvage, which is not reimbursable. [IAC 13-3-3(d)]

An Estimate will be provided for Reimbursable Projects only per IAC Rule.

Section 9: For work the utility is entitled to be compensated by the Department, the work plan shall include documentation of property interests and compensable land rights. [IAC 13-3-3(d)]

Not Applicable.



Section 10: The implementation of this approved work plan is dependent upon the issuance of: (a notice to proceed will be provided when items in Section 6 are accomplished)

Items Completed	Yes	Not Applicable
An executed reimbursement agreement with INDOT/LPA:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
A relocation permit from INDOT/LPA:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(Note: Double-click on box in Yes or NA to mark it with an "X")

Submitter Signature

Brynn Streeter

Submitter Name Printed

July 6, 2016

Date



INDOT/LPA use only below this point ----- INDOT/LPA use only below this point

The following sections are to be used by **INDOT** personnel to review the utility relocation work plan.

Section 11: The Department shall review the work plan to ensure that it: [IAC 13-3-3(e)]

Description	Yes	No	Initials
(1.a) is compatible with department permit requirements	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LNB
(1.b) is compatible with the project plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LNB
(1.c) is compatible with the construction schedule	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LNB
(1.d) is compatible with other utility relocation work plans	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LNB
(2.a) has reasonable relocation scheme	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LNB
(2.b) has a reasonable cost for compensable work	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LNB

(Note: Double-click on box under Yes or No to mark it with an "X")

Comments on any sections (1.a – 2.b) that were marked No:


Reviewer Signature

8/8/16
Date

Nick Batta
Reviewer Name Printed

Section 12: Approved Work Plan. [IAC 13-3-3(f)]

I have reviewed the work plan and found it acceptable.

Project Manager Signature

Date

Project Manager Name Printed

